0 2007 1582960 8
California State Library

NIA ★

BRARY.

Accession No. 179295

Call No. fc630.5 06
26 1914

ORCHARD and FARM

HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888

IRRIGATION

STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 1 Published by Country Life Publishing Co. January, 1914 Hearst Building, San Francisco, Cal. $1.00 a Year

Here's to a Prosperous 1914

Rex "THE STANDARD" SPRAY CHEMICALS

Made by the first company to manufacture spray material in a commercial way. REX materials make good because back of them is both experience and success with spray materials. REX chemicals are compounded in California for California conditions. The first Lime Sulphur solution was a REX solution, and for every kind of spraying REX GOODS are established as "STANDARD."

"THERE IS A REX FOR EVERY ORCHARD TROUBLE"

REX Lime Sulphur, Miscible Oils and Phenols, Arsenates and Sulphides are proven for every need. Let us send you our Bulletin on "How to Raise Better Fruit and Plenty of It." Free on request. Address

CALIFORNIA REX SPRAY CO., BENICIA, CAL.

A new book that tells you how to care for and feed YOUR CROPS

It's Free

WE have recently issued a book entitled "The Care and Feeding of Crops", written by P. L. McCreary who was for five years chemist in the fertilizer department at the California Experiment Station and for three years engaged in soil and water work for the United States Reclamrtion Service.

Mr. McCreary has made a thorough study of Pacific Coast soil conditions and is an expert on fertilizers and fertilization.

Do you know that a big crop draws out of the soil practically all of the available plant food and that it takes two years or more of weathering action to put the soil into a condition so that plants can get the necessary food from it? Do you know that there are ways to get a big crop every year?

This book illustrated with remarkable photographic reproductions is written so that you can understand every word of it. Every page will give you valuable practical information. You can't afford to be without it. Write for it today. A postal card or a letter will bring it to you absolutely without any obligation on your part.

The Pacific Guano & Fertilizer Co.
804 SECURITY BUILDING SAN FRANCISCO

Selling Agents for Southern California, Chapman Fertilizer Co.
218 Central Building, Los Angeles

MAKERS OF THE FAMOUS
GAVIOTA FERTILIZER

THE PACIFIC GUANO & FERTILIZER CO. SAN FRANCISCO, CAL.

This is My Hired Man

His name is Hercules Dynamite, and he beats four of the ordinary kind, when it comes to planting trees. He's cheaper, too.

I planted my orchard five years ago—blasted the holes in the Fall, left them open to the weather all Winter, and put the trees out in the Spring.

Hercules Dynamite

saved me time, labor and money.

Now I've got the finest young orchard in the country. My trees came into bearing sooner than any spade-planted trees you ever saw. My first year losses were less. Dynamite breaks up the ground and gives the roots a chance to grow and get nourishment. Stop stooping over a spade! Let Hercules work for you.

Write for a copy of "Progressive Cultivation," and learn how to practice it. Mention the name of your local dealer.

Address Dept. 52
HERCULES POWDER CO.
Chronicle Building, San Francisco, Cal., U. S. A.

FOR HOUSEHOLD DEPARTMENT FEATURES
See Our Special Offer to Subscribers on Page 36

POWER SPRAYERS

BEAN POWER SPRAYERS are strong, durable, efficient, and differ chiefly in size and capacity. All deliver the spray at high pressure and do the work at a minimum of cost and attention.
SEND FOR CATALOG 28-A, which describes the entire Bean line of Hand and Power Sprayers and tells about the twenty-one distinctive Bean features. A Postcard will bring it.
BEAN SPRAY PUMP CO.
225 W. Julian, San Jose.
Cal. Branch, Fresno, Cal.

Fancy Alfalfa Seed
Vetch
Recleaned Barley Seed
Write for Prices and Samples
West Coast Seed House,
116-118 E. 7th St., Los Angeles, Cal.

—lowest priced —simplest —most reliable

The Bolton Orchard Heater supplies the needs of the large orchardists on account of its reliability and its efficiency. It is good for the small orchardist because of its low price and cost of installation.

200,000 sold in one season. Hundreds of orchardists using and recommending the Bolton Orchard Heater. Their words of praise are worth more than anything we can say. One man can light 100 heaters in five minutes.

Send for booklet O F. It contains information about orchard heating—names of prominent orchardists who are using it, and facts not generally known and which are suppressed in high-priced heaters. Send to-day.

Frost Prevention Company
Merchants National Bank Bldg., San Francisco, Cal.

REGISTERED HOLSTEIN-FRIESIAN BULLS

THAT WILL INCREASE YOUR PROFITS.

Two of our herd bulls are from 28,000-lb. dams. Butter records average above 1,100 pounds. The only two cows in the world that have produced over 50,000 lbs. milk each in two years. Fifty cows on official yearly test. Fifteen cows, including several 3 and 4-year-olds, have averaged over 700 pounds fat and 20,000 pounds milk. Forty cows average over 600 pounds fat. Fifteen heifers with first calf average 490 pounds fat (600 lbs. butter). Estimate the value of a bull in your herd that will introduce 50 per cent. of this blood in the next crop of heifers. Prices, $125 and up. Have something especially fine to offer breeders of registered cattle. Write to-day for information.

Aralia De Kol.
28,090 Pounds Milk One Year.

A. W. MORRIS & SONS, Woodland, Cal.

ORCHARD AND FARM
IRRIGATION

Vol. XXVI JANUARY, 1914 No. 1

Insect Pest and Fungous Disease Control

By S. W. Foster, San Francisco, Cal.

MOST of the insect pests and fungous diseases attacking deciduous fruit trees in California can be controlled by spraying the trees. True enough, there are some diseases, such as pear blight, also certain physiological troubles that do not lend themselves to treatment by spraying, and other means of control must be resorted to.

Time of application and thoroughness with which the work is done are the essential points for the success of all spraying operations. Spraying, to be successful, must be done before the injury is accomplished by the insect or disease. It is too late to spray efficiently for codling moth after the worms have entered the fruit, or for apple scab after the skin has been ruptured by the growing fungous, or for aphis after the leaves have curled. All parts of the tree, foliage and fruit should be thoroughly covered at every application. If this is not done, centers of infestation are left, from which the insects or fungous may spread to the sprayed areas after the material sprayed on the trees has lost its efficiency.

Time to spray for Codling Moth—On the right the calyx cup is open and it can be easily filled with the spray mixture. On the left the calyx lobes are shown closed. When in the latter condition the time has passed for successful spraying.

During the dormant period of deciduous fruit trees, we have the best opportunity for the control of all scale insects which attack deciduous fruit trees. Also fruit growers should be on the lookout for the eggs of several insects which pass the winter in the egg stage. Chief among these are the eggs of the green apple aphis, purple aphis, walnut aphis, the almond red spider, cankerworms, and the egg masses of the tent caterpillar. In addition to these, in California, the aerial form of woolly aphis can be greatly reduced by the same treatment applied for scale insects.

Some of the fungous diseases subject to control during the dormant period are anthracnose on apple trees, blackberries and raspberries; peach blight, shot-hole fungous and curl leaf on peaches and other stone fruits. Moss and lichens, while not strictly fungous diseases, furnish harboring places for many injurious insects, and should not be allowed to develop on fruit trees.

Most of the insects mentioned above, and the moss and lichens, can be best controlled by spraying the trees in the late winter or early spring with crude oil emulsion. When the trees are free from moss and lichens and some of the large scale insects (such as brown apricot scale or large black and white scale) are present, and it is desired to spray only for San Jose scale, the eggs of the green aphis and walnut aphis, excellent results can be obtained by the use of lime sulphur solution at full winter strength just before the fruit buds open in the spring. Lime sulphur solution is also desirable on peach trees as the buds open for peach moth or twig borer, and will also aid in controlling mildew, shot-hole fungous and curl leaf. However, when the trees are coated with moss and lichens, or are infested with any large scale insects, or woolly aphis, or the eggs of the almond red spider, cankerworms or tent caterpillars, the best results will be obtained by the use of a well made crude oil emulsion.

It is now possible for fruit-growers to purchase on the market well made and reliable crude oil emulsions ready for immediate dilution in the spray tank. These emulsions vary somewhat in concentration from different manufacturers, and should be used according to the directions furnished by the manufacturer. While these prepared materials may cost slightly more than the crude materials for making the emulsion at home, yet the trouble, time and labor of dissolving soap and making the emulsion in the field are avoided. Also, the prepared emulsions are usually more uniform in composition. When it is desired to make the emulsion at home, use only the natural crude oil, rather than the usual fuel oil, because the former is more easily emulsified and gives uniformly better results. Ten to twelve gallons of a 20 to 23 degrees Beaume natural crude oil, emulsified with sufficient soap and water to make 100 gallons of spray solution, is sufficient for the troubles mentioned above.

The insects mentioned in this paper are, as a rule, more susceptible to treatment in the late winter or early spring just before the buds open. The reasons for this are two-fold: the winter rains have cleaned most of the dust and dirt from the trees, also the waxy covering protecting the eggs of the scale insects is loosened to some extent, which admits of better penetration by the spray, and the eggs of all insects are nearer the hatching period.

For such diseases as anthracnose on apple trees and berries; peach blight, shot-hole fungous and curl leaf on peaches and other stone fruits, spray the trees in the early fall with Bordeaux mixture. This spraying should be done before the winter rains begin. Use the commercial paste at the rate of 8 to 10 pounds to 50 gallons of water, or, in case of the home-made preparation, use the 6-6-50 formula. Lime sulphur solution applied in the spring as the buds open will prove a valuable aid to the work done in the fall.

In the spring and summer California fruit-growers have to look out for such troubles as thrips, purple aphis, green aphis, mildew, scab, leaf hoppers, cankerworms, blister mite and codling moth on all pomaceous fruits, peach moth on peaches, and read spider on all classes of fruit trees and grape vines.

The pear thrips is discussed elsewhere in this issue and treatment will be mentioned here only in connection with the control of other troubles. When thrips first appear in numbers, as the first buds are opening in the spring, spray with a 3 per cent distillate oil emulsion and black leaf "40." This treatment will also prove beneficial against many species of aphis and against peach moth when such is present. For pearl leaf blister mite and green aphis, spray with lime sulphur solution at winter strength just as the first buds open at the tip.

With applies and pears, when the fruit cluster buds open, but before the blossoms appear, the first treatment for scab and mildew should be applied. Thrips and aphis must be taken into consideration when present. For mildew alone, use either atomic sulphur, 4 pounds to 100 gallons of water, or iron sulphide, 8 pounds to 100 gallons of water. When scab is also present, use atomic sulphur at the rate of 12 pounds to 100 gallons of water, and for thrips or aphis, or both, add a 3 per cent distillate oil emulsion and black leaf "40," 1 to 1,500. This combined treatment, if properly applied, will be an efficient control for purple aphis and serve as the second spraying for thrips and as the first spraying for mildew and scab, and in most sections will kill practically all of the green aphis. Where tussock moth or leaf folders are present, arsenate of lead paste, 8 pounds to 100 gallons of water, or arsenite of zinc powder, 4 pounds to 100 gallons of water, should be added. On pear trees, where neither mildew, scab or other fungous troubles must be taken into consideration, the fungicide may be omitted.

As soon as the petals fall from the trees, the first spraying for codling moth must be applied. Use arsenate of lead paste, 4 pounds to 100 gallons of water, and for mildew add either iron sulphide, 6 pounds, or atomic sulphur, 4 pounds to 100 gallons of water. For scab, the atomic sulphur should be used at the rate of 12 pounds to 100 gallons of water and a 1½ to 2 per cent distillate oil emulsion with black leaf "40," 1 to 2,000 should be added for thrips larvae, or

179295

Work of the pear thrips and what spraying can do to defeat them—The photograph on the right shows all the fruit buds destroyed in an unsprayed part of an orchard. On the left the fruit buds are shown all saved by spraying with distillate oil emulsion and nicotine. Both photographs were taken on the same day and in the same orchard.

for any aphis that have escaped previous sprayings. All spraying must be done thoroughly, under high pressure, and every calyx cup filled with poison for the codling moth, and the leaf buds drenched for thrips larvae, leaf hoppers and cankerworms. This treatment forms the first spraying for codling moth, the second spraying for scab and mildew, and should be the final spraying for aphis and thrips.

The second spraying for codling moth should be applied about three weeks after the petals fall from the trees. Use arsenate of lead, 4 pounds to 100 gallons of water, with a fine mist spray under high pressure, and thoroughly cover the entire surface of all fruit and foliage. For scab and mildew, add atomic sulphur, 12 pounds to 100 gallons of water, which will also be an efficient treatment for the tetranychus red spider, which has recently become so abundant on deciduous fruit trees and grape vines in California. (This species hibernates in the ground and under rough bark, hence is not susceptible to treatment by spraying during the dormant period as is the case with the almond red spider, which passes the winter in the egg stage on limbs of the tree.) This spraying is the last treatment for scab and mildew, the second spraying for codling moth, the first spraying for red spiders, and, when properly applied, will serve as an efficient check for the saw fly larvae or slugs.

The third spraying for codling moth should be applied about ten weeks after the petals fall from the trees. The time can be definitely determined by collecting a large number of the early appearing first brood worms, and allowing them to pupate in rags or paper inside a wire cage suspended in the tree or kept in a shady place near the ground. Spray the trees immediately after the first moths emerge in the cage. Arsenate of lead should be used at the rate of 4 pounds to 100 gallons of water and applied as a fine mist, covering the surface of all fruit and foliage. If red spiders are present at the time of this spraying, even in very small numbers, atomic sulphur should be combined with the arsenate of lead. These three treatments, if properly applied, will form an efficient control for codling moth and red spiders, and with the spraying before blooming as directed, no difficulty should be experienced in controlling scab, mildew, aphis, cankerworms, tent caterpillars, leaf hoppers and the tussock moth.

It is not often necessary to spray any one orchard for all of the troubles mentioned. When you have only aphis, codling moth and mildew, the first thrips treatment may be omitted from this schedule; or, in case the eggs of the aphis were killed by the winter spraying, the oil and nicotine may be left out of the first scab and mildew spraying just before the trees come into bloom. When no scab is present and only mildew is to be sprayed for, atomic sulphur may be used at the rate of 4 pounds to 100 gallons of water, instead of 12 pounds, as is necessary for scab.

For thrips, cankerworms, aphis and red spiders on prunes, cherries, almonds, etc., spray the trees with distillate oil emulsion and black leaf, as outlined for pomaceous fruits, adding arsenate of lead for cankerworms to the spraying for thrips larvae after the petals fall. An additional application, using atomic sulphur, 10 to 12 pounds to 100 gallons of water, should be applied four to five weeks after the petals fall from the trees where red spiders or mites are present.

For mildew, red spider and vine hoppers on grape vines, spray the vines in the spring when the first young growth is from twelve to eighteen inches long. Use atomic sulphur at the rate of 12 pounds to 100 gallons of water, adding black leaf "40" at the rate of 1 to 2,000. The entire trunk of the vines, as well as the young growth, should be thoroughly covered. The second application should be applied from three to four weeks later, using both the atomic sulphur and black leaf "40," provided the vine hoppers are numerous. If only red spiders and mildew are to be considered, the nicotine preparation may be omitted. For mildew alone on grape vines, satisfactory results can be obtained by dusting the vines with dry sulphur frequently during the season, but dry sulphur is not satisfactorily effective against red spiders or mites and vine hoppers.

The Greatest Fruit Menace

—By O. E. Bremner—

EACH year, during the early part of December, the fruit growers of California meet in a great convention, where they bring the reports of the year's successes and disappointments, of the progress in the war against disease and insect foes; the advantages of better and cheaper transportation; the widened markets, and the lure of new fields of activity. And amongst all the topics brought up by programme or general discussion, there is generally one which stands out boldly as the dominant feature of this great convention—the imminent danger of a Mediterranean fruit fly invasion.

Mr. Frederick Maskew, Chief of the State Horticultural Quarantine staff, presented this subject to the convention of fruit growers with such convincing proof that they voted to a man to have a commission at once visit Washington, which would include Mr. Maskew, and solicit more aid and protection from the Federal department.

Mr. Maskew stated that the fly maggot was common in such fruits as Chinese oranges, grape fruit, guavas, Kamoin nuts and others hosts, and particularly in coffee berries, which abound in most yards. The consensus of opinion among those of the islands who have the matter in charge, is that the present campaign is in no sense a control, and simply acts in a way to reduce the actual numbers in the inspected district.

There has been a great sense of uneasiness on the part of the California growers over the great quantities of bananas and pineapples which are allowed to come to this State from the islands, and it was in regard to a possibility of an introduction from this source that commanded much of Mr. Maskew's attention. He found little danger of transmitting the pest at present from that source.

When it comes to the matter of ship stores, in the line of fruits and vegetables, there he found the real danger point. At present the amount of fruit and vegetables taken on the ship stores at Honolulu is considerably less than formerly. They consist of apples, pineapples, bananas, kona oranges, cucumbers, string beans and peppers, and in all these, except the pineapples and bananas, the fruit fly is commonly found, for scarcely a ship reaches San Francisco that has any of these stores left over, but what the fly is found in them. These fruits are commonly used on the tables and can be easily taken by the passengers and might be smuggled ashore. The same might be said of the vegetables, as far as the Chinese, and for that matter the white crew, is concerned.

There is absolutely no inspection of this material in Honolulu and it is taken on at the pleasure of the steamship people. That the danger is as great as ever is shown by the fact that a comparison of the quarantine officer's books, revealed as much contrahand ship stores containing the dread fly, to-day as two years ago. It may seem like a small thing, but to safeguard California's millions invested in the fruit industry, it is only right that this source of danger should be at once removed, and a careful federal inspection of all ship stores, and the rejection at once. This is one of the objects that Mr. Maskew and the commission hope to obtain on their trip to Washington. There is little doubt that the fly was introduced into Honolulu in one of two ways; by this ship stores route, or by an individual who accidentally allowed it to escape.

There is, at present, no official inspection of the express packages at Honolulu, and in the past this has been a serious problem, but from now on the express agent will require a statement of the contents which must be sent in duplicate, and the express company will be held personally responsible and prosecuted for all contraband found in its possession.

All the United States mail of the fourth class is now inspected at the point of origin, and if it contains any plants or fruit products must be accompanied by a certificate.

There is one other, and, perhaps, the hardest of all sources of danger to combat. It is the traveling public. A few weeks ago there arrived at San Francisco a man and his family returning from a visit to the Hawaiian Islands to their home in Southern California. In his overcoat pocket were some Kamani nuts, and in one of these over a hundred larvae of the dreaded Mediterranean fruit fly was found. He confessed that he had intended to immediately plant these; of course, being totally ignorant of the fly they contained; and, undoubtedly, the State was saved from the establishment of the fly in the heart of the citrus district.

Spraying as an Aid to Fumigation

—By Paul R. Jones, Entomologist, San Francisco, Cal.—

IT is human nature if one person makes a success of a thing for everyone else to follow without investigating why or from where the success came. Never was this more true than in the control of citrus fruit insects in Southern California. A number of years ago spraying was the chief means of combating these insect foes and fungus troubles. No general system was followed, but each orchardist tried to work out his own salvation. Since most of the damage was by scale insects, various oil sprays were used, chiefly mechanical mixtures of distillate, kerosene and water. Besides the above oils, emulsions of these were made as well as various soaps, lime sulphur solutions and Bordeaux mixture. Lack of uniformity in this spraying, crude appliances, lack of knowledge of the life history of the insects treated and the kinds of oil used caused a great deal of injury, both immediate and accumulative to the fruit and trees. With the advent of fumigation, which afforded a surer and more scientific method of killing the majority of these insects, spraying ceased until very few growers in Southern California really know how to spray at present as far as modern methods go. The same men who went so one-sided to spraying in former years now turned just the other way and would not have a spraying outfit on the place. Many went as far as to proclaim fumigation as a panacea for all evils and even spoke of its value as a fertilizer. The result was that spraying became a lost art in Southern California while fumigation was improved on until it became a nearly perfect control for certain citrus insects. Within the past few years certain physiological conditions, financial troubles, the rise of a number of insects in spite of all the fumigation, old age in some orchards and continous clean and shallow cultivation have caused many citrus growers to scratch their heads and think so that now considerable spraying is being done again among the orange groves. Any one train of thought or single method of procedure in relation to agricultural matters causes human beings to get into a rut and neglect certain essential things which are not noticed at first and which are hard to correct later. Combined with all of these conditions favoring a spraying revival have been wonderful improvements in spraying machinery and new sprays, so that modern up-to-date spraying has very little in common with that practiced ten to fifteen years ago. Fumigation as well as spraying has its drawbacks for the control of citrus insects. Some of its good features are as follows.

1. Ability of hydrocyanic acid gas to permeate through citrus trees and reach and kill the majority of all insects and insect eggs if the fumigation is done thoroughly and at the right time.

2. Safety to tree and fruit under most climatic conditions.

3. Uniformity in the present system of dosage, apparatus and method of procedure if properly followed out.

The objections to fumigation as a single means of control for all insect and fungus troubles in citrus orchards are:

1. Cost of treatment.

2. Lack of sufficient tents to fumigate all the citrus groves at the best time in relation to the development of the insects.

3. Inability to cope properly with some troubles such as red spider, mealy bug and off hatches of certain insects in the different localities.

4. The necessity for night work.

5. Climatic conditions such as hot weather, damp, cold weather.

6. Unfitness as a fungicide.

The advantages of spraying are as follows:

1. Cheapness of treatment.

2. Opportune time when application can be made regarding the development of the insects treated and especially for spot work.

3. Combination of insecticides and fungicides.

4. Better control of all fungus troubles and some insect pests, such as thrips, mealy bug, red spider.

5. Climatic conditions, such as day work, adaptability both in cool and moderately warm weather.

The disadvantages of spraying are as follows:

1. Lack of sufficient education in how to spray, when to spray, what to spray for and what sprays to use.

2. Inability to compare favorably with fumigation in the percentage killed by a single treatment against certain insects, such as red scale, purple scale, etc.; or in other words, the difficulty in hitting all of the insects present on the trees.

3. Necessity for more than one application.

4. Liability to injure fruit and trees.

It will be seen by comparing the advantages and disadvantages of both fumigation and spraying that neither mode of treatment for insect pests and fungus diseases is sufficient where one has several of these troubles in his orchard, and this is usually the case. Eliminating any discussion of fumigation for the majority of citrus scale insects because the success of it is granted, let us look into spraying as an aid to fumigation.

Time to Spray for Pear Thrips.—In cases of bad infestation the first spraying should be applied as soon as the buds begin to swell, as shown on the left. The second application should be given when the buds begin to open at the top, as shown in the middle photograph, and the third spraying should be done when the clusters spread open, as shown in the photograph on the right.

Before considering spraying one should first familiarize himself with some of the best spraying machines on the market. In selecting one he should obtain an outfit that has abundant power, one that will supply four nozzles at a steady pressure from 250 to 275 pounds. The spraying outfit, run by a gasoline engine, is the most efficient and powerful. The engine should be from two and a half to four horse power and be equipped with automatic control. Directly connected to the engine should be a pump capable of maintaining from 250 to 275 pounds pressure and delivering from 6 to 13 gallons of spray a minute. Automatic pressure control is also desirable, as it furnishes a uniform spray and is less dangerous. A 200 to 250 gallon oval or half barrel shaped tank containing a good propeller agitator and all of these items mounted on a sprong light truck make up the main body of a spraying outfit. The next things to be considered are the hose, spray rods and nozzles. A hose able to withstand 300 pounds pressure, any spray mixture and one-half inch in diameter by 50 feet in length is best adapted for all spraying. To this should be attached for spraying on citrus trees 8 to 10 foot bamboo spray rod with aluminum center. More mistakes are made in nozzles than in the other spraying appliances. Bordeaux clipper or small vermorel nozzles are not adapted for spraying citrus trees. One should use two nozzles on a spray rod of the angle, chamber type, which are capable of throwing from one and a half to two gallons per minute each at high pressure and the spray should be a penetrating and driving one sufficient to reach all parts of the tree. Nozzles of the jumbo, whirlpool, mistry type are all adaptations of the chamber nozzle and are to be preferred over all others. It is essential to use angle nozzles so that both undershot and overshot spraying can be done. Several makes of outfits are good, and it is always better to have a factory made outfit than one assembled at home or at a blacksmith shop.

The most efficient and economical way to spray after one has a good outfit and auxiliary equipment is to have a crew of a man and a team and two nozzle men. Four leads of hose are too many to run to do the best work. In spraying it is better to spray two entire rows at a time rather than four rows or to go up and down every row. It is also better to work from the outside of the row and tree in towards the spraying outfit and to spray the inside of the tree first, then from

The Pear Thrips for 1914

—By Dudley Moulton—

IT seems opportune to sound a warning to fruit growers whose orchards have been injured by the pear thrips during the past few years. A recent examination of the soil under trees where thrips were common last year indicates that they are very numerous and as there have been sufficient early rains to moisten the ground, conditions are entirely favorable for a normal development of the insects. The damage from thrips was not so serious last year as it had been during the previous seasons, and this has increased the sentiment that spraying is not necessary. Last year the drouth retarded a normal development of the thrips in the ground, which was apparent by the long time that they were leaving the ground and arriving on the trees, a period extending from February to June, while normally they appear almost all at once in February and March. The present indications of the thrips in the ground and their normal development portend a large brood for next year and their early appearance as during previous years. The non-spraying method recommended by some should therefore be taken advisedly. The safer method is to have spraying pumps ready for immediate use and the formula for spraying decided upon and materials either ready at hand, or their purchase arranged for.

The most successful and generally recommended formula is a combination oil emulsion and tobacco. The old formula for a home-made emulsion has been so much improved upon by manufacturers of spraying materials that it seems best to recommend the new formula.

The proprietary emulsions dilute and mix readily in water and with tobacco solution. This combination of oil and tobacco is recommended when spraying only for thrips, but a more complicated formula should be used when other insects such as the codling moth, or fungus diseases such as pear and apple scab are to be controlled. Using one combination spray will serve for all purposes against the thrips, codling moth and scab. It will be well for those who anticipate spraying to get in communication with manufacturers of spraying materials and be ready to buy their materials and spray at the proper time.

the top to the bottom of the tree and finish with some undershot work near the base of the tree. Furthermore, always spray thoroughly at high pressure, and put plenty of liquid on the tree. Too many sprayers are content to merely wet the tree. This is not sufficient: it should be soaked until every portion is hit. In doing this no undue waste should be made, but the nozzles kept moving all the time.

The next important thing to consider is what to spray for. Good results can be obtained against the black scale, mealy bug, red spider, silver mite, thrips, soft brown scale, longulus scale and fair results on the yellow, red and purple scales. Also spraying alone can aid and control moss and lichens (which are showing up on many citrus trees since the big freeze) brown rot, wither tip, scaly bark and gummosis. Many of the so-called physiological troubles can be helped greatly by spraying by the stimulative action of the sprays and the cleansing given the trees. If a fruit grower has several of the above mentioned troubles, spraying becomes a necessity if he expects the best results in the way of large crops and clean, healthy, vigorous trees. If only one or two insects are present, such as the red scale and purple scale, fumigation will suffice except when any fungus diseases are present.

Many sprays have been used and can be used on citrus trees with varying success for their many troubles. The more important ones are: Yel-Ros, carbolic acid emulsion, distillate oil emulsion, kerosene emulsion, lime sulphur, resin wash, atomic sulphur, bordeaux mixture, soap powders and dry sulphur by dusting. All of the insecticides used against citrus fruit insects are contact insecticides, since the insects to be treated are sucking insects and must be hit by the spray. Poison sprays are of no avail. The mixture of resin and caustic soda or sometimes called the resin wash is one of the older sprays and is quite efficient if used strong enough. Its chief objection is in its preparation and liability to injure the trees and fruit. Lime sulphur solutions are not efficient scalecides on citrus trees, but are used mainly as a red spider treatment and a fungicide. Bordeaux mixture should not be used as an insecticide, but as a fungicide and general tonic; also, for some of the obscure troubles usually ascribed to physiological conditions. Soap powders do not possess any great insecticidal value and do not give the results on citrus scale insects usually attributed to them; they usually contain about twenty per cent fatty matter (mostly from tallow), fifty per cent washing soda and the remainder hydroscopic water and inert matter. They are good, however, for cleaning off smut following bad scale infestations. Distillate oil emulsions and kerosene emulsions are not to be generally recommended unless one secures a proper oil and makes a perfect emulsion, or one that will not separate after it is applied to the tree. One or two commercial products are on the market and are to be preferred over home made preparations on account of uniformity and better emulsification.

A new form of sulphur which is used extensively in the East as a summer fungicide has come into use recently on citrus trees in Southern California and is known as atomic sulphur. It is pure sulphur ground very fine in the presence of some organic or vegetable oils and put up in paste form to be used when diluted as a liquid spray. As the fineness of sulphur determines in a measure its efficiency, the fact that atomic sulphur is about 90 diameters finer than the best resublimed sulphur makes it a very valuable spray in this respect. It is practically a specific for red spider, silver mite, mildews, scab and different kinds of rot during the summer months on all varieties of citrus and deciduous fruits. The presence of the organic oils enables it to spread and penetrate much better than other forms of sulphur and the action extends over several weeks. The lack of any caustic materials in its preparation render it absolutely safe, much more so than the ordinary lime sulphur as a summer spray, especially during hot weather. Another point not to be overlooked is its combination value, since it mixes readily with nicotine sprays, oil emulsions, Yel-Ros, soap solutions, besides many other insecticides for use on deciduous trees.

A spray to be of any use against various scale insects infesting citrus trees and also against the mealy bug must be very penetrating, at the same time safe to the fruit and tree. It should also leave no deposit on the fruit and foliage. Within the past two years a commercial product possessing these requirements called Yel-Ros appeared in California and has met with great success as a general scalecide and mealy bug spray on citrus trees. The results were not always good, but could usually be traced to improper spraying, work at the wrong time or at too weak a strength

It is not within province of this article to discuss or recommend the proper strength for each spray to be used on the diferent citrus insects, but a few words on the time of application are not amiss. Most fruit growers are prone to start spraying after nearly all of the damage by insects has been accomplished and then attribute poor results to the spray used. Another great mistake that has been made in spraying citrus trees in the past was a desire by most fruit growers to kill all of the insects with one application, which style of spraying usually injured the fruit and trees on account of the excessive strength used and still did not kill an unusually high percentage of the insects. It is a much better policy to make two, or even three, applications both in regard to the killing of the insect and safety of the tree, using the spray at weaker strengths and performing the spraying at the proper time.

All insects are much easier controlled at certain times, and this is very true of citrus fruit insects. In spraying for the black scale, red scale, yellow scale, purple scale and lungulus scale, aways try to operate when many young are present and repeat the spraying several weeks later. Various bulletin and spray calendars give the correct time and strengths of the sprays to be used against the different insects in fungus troubles. Generally speaking, July, August, September and October are good months for spraying against scale insects. The late fall, winter and spring for the control of the mealy bug, and the late spring and early summer for red spider treatments. Bordeaux mixture should be applied in the fall after fumigation and never before unless a very long time intervenes between both operations. Lime sulphur can be used in the fall, winter and spring as a general clean-up spray and tonic, but care should be exercised when used as a summer treatment on account of the liability to burn.

If the expense of spraying is compared to that of fumigation it is usually possible to make from two to three applications of the spray for the cost of one fumigation. The main point is lost, however, in this comparison. Spraying should be used as an aid to fumigation, and will more than pay for itself as a general invigorator and cleanser, especially on old orchards where only continuous fumigation has been practiced for years. The spraying of citrus groves every year or every other year with some good spray can not be too strongly advised for helping maintain a healthy and strong producing orchard.

Piping an Orchard for Spraying

By John Y. Beaty

THE conventional method of spraying an orchard is to use one or more wagon sprayers that are hauled down the rows, but a method which is more economical both in time and expense is in use in the Hayward Reed orchard, near Sacramento. Mr. Reed has 72 acres of pears and the trees are in soil that is rather wet, so it is difficult to haul heavy spray wagons through the orchard during the rainy season.

This was the necessity that led to the adoption of the present system, which, in brief, consists of a central pumping plant where the spray mixture is prepared in large tanks. A gasoline engine and force pump are operated in this building and the spray is forced through lines of piping that run along every twelfth row in the orchard. Opposite every twelfth tree is a connection where a spraying hose may be attached. Two hundred feet of hose is used by two men. One man carries the hose and the other handles the nozzle. In this way 196 trees may be sprayed each time the hose is attached.

Experience has shown, however, that it would be more economical if only 100 feet of hose were used, so that one man could handle it alone. This, of course, would require more piping for it would be necessary to have a line of pipe in every fourth row and a connection opposite every fourth tree. In this system, three-quarter inch galvanized iron piping is used. The owner thinks, however, that one-half inch piping might be large enough. No difficulty has been experienced during the time the system has been in use.

One of the advantages of the system is that it requires but one pumping plant for a large orchard. This plant is located in a permanent position near the water supply. One man can attend to the mixing of the spray and one man at each nozzle in the orchard can do as much work as he would on a wagon sprayer.

The system, however, eliminates teams and wagons and does away with extra time required to refill the tank. On the Reed place the pump is kept running during the entire day. At noon half the nozzle men go to dinner at a time so that the spraying outfit is working without a stop. The reason for this is that it avoids the necessity of cleaning out the pipe twice a day. In order that the spraying mixture may not settle in the pipes and thus partially clog them, it has been found necessary to flush out the system every time the plant is stopped for any length of time. This is easily done by shutting off the spraying material and turning in water.

Another economy is in the use of the engine. Instead of allowing this engine to stand idle most of the time during the year, it is connected with a line of shafting and used for grinding feed, sawing wood and other odd jobs that require power.

When the pipes were laid in the orchard they were placed far enough below the surface to avoid hitting them with the plows. The connections were placed in the center of the rows, which since has been found to be very inconvenient. If they were placed close to a tree they might be kept in sight all the time and there would be no danger of hitting them with the plow. As it is, they must either be dodged or else the upright must be removed after spraying is completed. This is what is usually done, but it necessitates digging up the connections the following year and sometimes it is quite a little trouble to find them.

The reason some fruit growers do not get the benefit of their spraying is that it is not done at the proper time or not done thoroughly. With an orchard piped for spraying the work can be done so much more quickly that there is seldom occasion for its not being done at the proper time. The spray may be applied immediately after a shower or even between showers, which is usually impossible with the wagon sprayer. The time saved is enormous. On the Reed place 6,500 large pear trees were sprayed in 10 hours by using ten nozzles, the work requiring twenty men. If the pipe connections had been placed closer together, ten men could have done the same work. The engine used is five horse power. A 200-gallon supply tank is used with a 50-gallon auxiliary tank. A uniform pressure of 240 pounds is maintained at the nozzle.

Culling Out Old Ewes

A systematic culling out of a flock and the replacing of the culls by the most thrifty and promising is a feature of sheep management that deserves more thought than is ordinarily given to it. It must be attended to annually if the owner expects to make any progress in the general improvement of his sheep.

When weaning the lambs is the most opportune time for this work, for it is then that the owner can best estimate the value of each ewe on the basis of her performance, both as a lamb and a wool producer. If a lamb is strong and thrifty and its mother has a healthy, rugged appearance, the chances are that she is qualified to give service for at least another year, especially if on further examination of the ewe herself it is found she still has a full sound set of teeth and that her skin has a good pink, healthy color. Further features to consider are the amount of wool and its quality, and whether or not her udder is sound

At the time the flock master is culling the ewes he should decide on which ewe lambs should be kept to perpetuate the flock. His selection should be based on the principle of flock uniformity in all points of size and type and upon the appearance of the lambs that are selected. The cull ewes and lambs should then be turned with the wethers in order that they may go to market in the best possible condition

Sheep as Soil Improvers

It is universally accepted that sheep droppings under like conditions contain a larger amount of fertility than those from the horse, cow or hog. One of the desirable features of this product is the uniform distribution made by the sheep over the land.

In Europe the value of sheep in improving impoverished or naturally thin soils has been recognized for centuries. It is stated on good authority that many of the soils would be almost worthless but for the fact that they are densely covered with sheep. Flocks of sheep aggregating two or three thousand in number are not uncommonly seen. The various breeds which naturally inhabit rough mountain lands, and precipitous cliffs, where only scanty and coarse herbage exists, manifest their great value in making otherwise worthless land bring in profitable returns.

Much of the gullied land and waste hillsides of this country could be utilized profitably in the production of sheep. Many farmers have proved this to their highest satisfaction. Much of the land which now grows coarse vegetation can be restored to profitable tillage by the use of sheep. Fortunately the sheep is a ruminating animal, and with the compound stomach can make use of much of the coarse grass and weeds which thrive on depleted soils.

Ministers Discuss Agricultural Problems

PROBABLY the most enthusiastic, as well as one of the most practical, meetings for the better understanding of country life conditions was held at the State Farm at Davis, when some six hundred ministers of all denominations, sects and creeds, representing every section of the State from the Mexican to the Oregon boundaries, and from the mountains as well as the valleys, assembled there for a week's visit.

It is an undisputed, but regrettable fact, that the trend of the native born population of the United States is toward the city, and that urban life is attracting a large percentage of boys and girls away from the farm. Many reasons have been advanced for this condition, but until recently the country church has given little thought to the matter, or to the fact that the minister might be a big factor in changing these conditions for the better. In the early days of the settlement of this country, when almost "everybody that amounted to much," from the president down, lived in the country and had no desire to leave the farm, the "parson" was the person who ministered to the needs of the entire community. He was well fitted for this leadership, because he, too, lived in the country and understood the problems and provocations of every member of the community. Times and conditions have changed. Too often now the minister is only a Sunday visitor at the church, and does not understand the actual conditions under which his flock labor six days in the week, and that the prevalence of conditions unfavorable to country life has been too well aired not to have attracted many away from the farm. Many farmers to-day believe that what the country needs is less impractical, unavailing investigation and a better realization that the country boy and girl needs more appreciation and recreation on the farm and less condemnation for wanting what the city offers. These phases of country life were discussed by ministers eager to take advantage of this opportunity to get together and plan more efficient work in making the country church a helpful feature in farm life.

The idea of "Ministers' Week" was not to make farmers of the ministers, nor to have agricultural sermons preached from the pulpit, but to give the preacher a view of the problems confronting the present day farmer and the methods the Agricultural college is using to help solve these problems.

All branches of agricultural activity were covered in a series of lectures and demonstrations by men recognized as representing the best in these various lines of work. Demonstrations were of practical, educational and inspirational value.

Did Mr. Preacher come from a fruit-growing district? There were lectures on soils and their management; varieties of fruits and their cultivation; insect pests and their elimination, by prevention or extermination. Lectures on fruit picking, packing and marketing gave a general idea of the importance of the industry and the labor necessary to produce annually the millions of dollars coming from the fruit crop.

Did the parson come from a dairying district? Types and breeds of dairy cattle; their adaptibility to Pacific Coast conditions; selection of the dairy cow, her feed care and the profitable handling of dairy products were the subjects of several lectures.

If the raising of beef cattle, hogs, sheep, or horses represented the leading industry of a community, these topics were handled by men skilled in every phase of the industry.

Poultry raising and the marketing of poultry products, grain growing, truck gardening, and about every thing else in the line of crop production, came up for discussion. The live stock, fruit trees, and fields of the State farm furnished splendid illustrations for these lectures, as well as the practical value of the farm to the city needing produce and the country needing better markets.

Ministers at a demonstration of one of the agricultural problems and practices of the present time. The rural ministers, with instruction of this character, will become more efficient in their fields and bring a better and broader rural life.

If in future country boys and girls hear more dollar-and-cent value of the study of soil conservation, pruning, spraying and marketing of orchard and field crops, and less of the "classic shades" a valuable lesson will result. The connecting links in this week of good fellowship and study were furnished by the faculty of the Agricultural college, who planned the week, the railroads that furnished the transportation, the State Board of Control, which made possible the week's entertainment, the faculty, directors, students of the farm, who made memorable the State Farm's hospitality. There was not a "grouch" the entire week, from the daily roundtable where the ministers talked over in open meeting the problems of their work, to the baseball grounds, where in friendly spirit the farm boys in several well-contested innings with their ministerial guests demonstrated the value of clean athletic sports as a part of any creed.

From a purely materialistic point of view, if every country district should see arise from this meeting a bigger attendance at the college of agriculture and a better country church, the meeting would prove of additional value. At any rate, it establishes the California country minister in the lead of other States in a ready response to the invitation to help along the work of bettering country life conditions.

All present united in hoping to see a repetition of such a week and in thanks to those who planned and made possible the meeting. To Dean Hunt, Director Van Norman and Professor Cocherons' untiring efforts and the splendid work of the college boys was due much of the pleasure of the week.

Farm Markets and Production

DAVID F. HOUSTON, Secretary of Agriculture, has just issued his annual report for the year 1913, and it presents in summary many broad economic questions. In discussing the problem of farm production he says:

"Increased tenancy, absentee ownership, soils still depleted and exploited, inadequate business methods, the relative failure to induce a great majority of farmers to apply existing agricultural knowledge, and the suggestions of dependence on foreign nations for food supplies warn us of our shortcomings and incite us to additional efforts to increase production."

The report states that there is no ground for thinking that we have yet approximated the limit of our output from the soil but that we have just begun to attack the problem, and have not reached the end of the pioneering stage, and only in a few localities have developed conditions where reasonably full returns are secured. We have unmistakably reached the period where we must think and plan.

In discussing the markets for farm products the Secretary says:

"In many directions further production waits on better distribution, and the field of distribution presents problems which raise in very grave ways the simple issue of justice. Under existing conditions the farmer does not get what he should for his product; the consumer is required to pay an unfair price, and unnecessary burdens are imposed under the existing systems of distribution. No one can see offhand just what part of the burden is due to lack of systematic planning or inefficiency, economic waste, or to unfair manipulation."

The report outlines the projects in this field as covering marketing surveys, methods and costs of marketing, including available market supplies in given production areas, demand at consuming centers, cold and other methods of storage, marketing systems and prices, and costs of wholesale and retail distribution of farm products. Other studies in this branch include: investigation of transportation problems and the elimination of waste in shipment, study of city marketing and distribution, study of grades, and finally co-operative production and marketing. The necessity for standardizing agricultural products as a prerequisite to proper marketing is given special emphasis. The adoption and universal application of one uniform standard for cotton would result in great simplification of all transactions, and do away with the complex methods of figuring buyers' limits. Practically the same results would follow and the same evils would be removed if standard grades for corn were universally adopted.

"The invidual farmer acting alone is helpless before the problems of rural credit and of marketing. Concerted action is essential. In co-operative effort, equity and justice must be kept in mind. Co-operation does not mean that an organization shall attempt to establish a closed market and to fix prices. This should be condemned as strongly in one field of industry as in any other."

It is recommended that provision be made for the establishment of grading standards for various farm products and for the promulgation of the standards already established by the Department for cotton and corn grades.

The Secretary in his recommendations for increasing the service of the department suggests that the Congressional seed distribution as now conducted be discontinued, and that constructive work in securing and distributing new and valuable seeds and plants be substituted.

With the Horses

The big, clumsy horse is the fellow that suffers from the heat most as a general rule.

If a colt has not style enough naturally to hold his head high, high mangers will not make him do it.

A horse's usefulness is measured by its strength and rapidity of movement rather than by size and weight.

If you have a horse which the women and children can drive safely, think twice before you sell it.

In breaking a colt, remember that it is an easy matter to overload and ruin him by causing him to balk.

Sprained tendons and joints are often the effect of long-grown hoofs continually tamping on solid floors.

Study to feed a balanced ration. Do not overlook the mineral value of each feed, especially for young stock.

The actual cost to keep added to the service fee of the sire, represents the amount at which horses you raise stand you.

The well-bred draft horse is always in demand, and the farmer that breeds it constantly is the one that makes the most profit in horses.

The patient mule is not much for speed, but he keeps going and usually arrives on time.

A mule never seems to be really frightened at anything. When he runs away he does it through pure love of mischief.

Attention to Colts

Give the colt careful attention, good stabling, good feed, exercise and daily handling from the very first, and you can train him to do good work without so much trouble and danger and in the end will have a horse you can depend on.

Much lameness in horses is due to improper shoeing. Horses should be shod by competent blacksmiths Is yours one?

Crop Conditions All Over California

COLUSA COUNTY (G. R. Boedefeld)—Prospects are good for a bumper crop of grain. Seeding has been extensive. Ranges are in excellent shape and livestock is doing well. The fruit harvest is over and the returns have been good. Orchards all over the county are in good condition.

Butte County (Earle Mills)—An unprecedented condition exists in the orange situation this year. The market in the East is so demoralized that it was deemed advisable to suspend picking until a material advance in prices could be secured. In a normal year this district has all its citrus fruits in the market before Christmas.

Humboldt County (George B. Weatherby)—Importations of fall nursery stock indicate considerable plantings of walnuts, apples, pears and peaches. The walnut stock is mostly of the Franquette, Mayette and Eureka type grafted in California black roots. It is believed all these varieties will do well in the county and many good sized tracts are being planted.

Imperial County (F. W. Waite)—Citrus fruits are now ready for harvesting. Prospects are good for vegetables. Considerable livestock is now coming into the valley for fattening. According to contracts now being made the acreage for cantaloupes for 1914 will be more than doubled. There are now signed up for the coming year over 7,000 acres for the crop. In 1913 there were shipped out of the county 3,400 carloads.

Los Angeles County (William Wood)—Oranges are 80 per cent of an average crop and of excellent quality. They are of good size, smooth, and very sweet for the stage of ripeness. Lemons are 25 per cent of a crop. There has been about the usual amount of packing and shipping this season. Vegetables are in unusually good condition for the season, owing to the early rains and absence of severe frosts. Since the rains some plowing has been done and a large acreage of grain will be sown as soon as another good shower arrives. Prospects are good for the season. The fumigation of trees is approaching a close for the season in the orchards, though some more will be done in the larger cities and towns, and where the red scale is in the greatest proportion. Sprayers in deciduous orchards are getting under way for treatment for peach blight and curl leaf and San Jose and similar scale. We latterly have had very little trouble with the San Jose scale in the orchards, but in the towns it occasionally shows itself to a dangerous extent.

Napa County (A. D. Butler)—Farmers in this county have had a very good year, though the crop of fruits has been somewhat light. Pears have yielded a good crop, but peaches have been about 30 per cent of normal, prunes about 50 per cent, apples about 40 per cent and cherries about 50 per cent. Grapes have yielded a fair crop. Livestock is doing well. There has been about eight inches of rain. The ranges are in good condition, and plowing and planting grains is well under way.

Nevada County (D. F. Norton)—Deciduous fruits of all kinds have been harvested. We have a fair stock of apples and winter pears on hand that are commanding good prices. Oranges are being harvested and are bringing good prices. They are all of fine quality. Grapes have all been harvested. Tokays and a few black varieties are still in the market. Winter vegetables are in good condition and livestock is doing well.

Orange County (Roy K. Bishop)—Naval oranges are well colored. Valencias are making good growth. Lemons are in fine condition and showing good winter blooming. There has been no injury from winds. Vegetables in the thermal belt are doing fine. There was one light frost during the month. In the lowlands tomato plants were injured, but in most places just the tops were nipped. The green tomatoes will still ripen. So far there have been no high winds.

Riverside County (R. P. Cundiff)—Citrus fruits are coloring nicely and the sizes are good. The crop will exceed the earlier expectations and estimates made by many growers. About 100 cars have been shipped for the holiday trade, and the prices received have been, in the main, satisfactory. The crop of wine grapes was fair with a first-class quality. It is too early to make estimates as to the grain crop. A large acreage is in process of planting.

San Bernardino County (S. A. Pease)—We have not yet beaten the brown scale which made its appearance here a short time ago. This is a new pest, but we hope to get the best of it.

Santa Barbara County (C. W. Beers)—Pruning and fall spraying is now in progress. With the citrus fruits fumigation, fertilization and winter preparation of soils is now under way. The bean fields are being prepared to hold the maximum of rainfall, and there is considerable of liming of heavy soils to improve their physical condition. The rainfall for the month up to the 20th was one inch.

San Diego County (H. A. Weinland)—Lemons are coming in rapidly now. They are running a little coarse, but otherwise the crop is excellent. Oranges will run somewhat undersized where water was scarce, but prospects for these are good wherever the trees have recovered sufficiently from the freeze. Much hay and grain has been put out, the soil begin in fine condition since the recent rains.

Shasta County (George A. Lamiman)—All grain crops are looking well and are making good growth. The rainfall for the last thirty days has been six inches. Olive picking is still under way and the crop is good. Tree shipments are beginning to arrive, there being 19,000 already received for the season. These are olives, prunes, peaches and apples.

Ventura County (R. S. Vaile)—The new crop of lemons is just coming in and the prospects for a good harvest are good. Early rains are permitting the early sowing of grain and probably half of the county's 70,000 acres are now planted. The rainfall from November 20 to December 17 was a quarter of an inch.

Yolo County (G. H. Hecke)—Oranges are now being harvested in Rumsey and Capay valleys. The crop is fully up to expectation in quality. The acreage in citrus fruits in these favored sections will be largely increased during the next planting season.

Yuba County (G. W. Harney)—The citrus fruit yield is exceptionally good. The crop is being slowly marketed. A large part will be used for the Christmas trade. The total production for Yuba county this year will total fifty cars. Grapes are all harvested. The crop was normal. A few raspberries are in the market, but the harvest is ended. Throughout the county much land is being prepared and sown to barley and wheat. Extra large plantings will be made this season on account of abundant rain. Livestock is showing up to better advantage. The rainfall to date for the season is 7½ inches. This rainfall has given great encouragement to all agricultural and horticultural operations. More work in these lines is in progress than for the past two years. Many growers are preparing to excell in fruit and field products for exhibition purposes. To this end much attention to fertilizers is being given. In 1914 will be grown the specimens for exhibition at the bix exposition.

All things in the way of backsets come to him who sits around and waits when he ought to be moving and doing.

Some Problems of the Farmer

WILL you kindly advise me if there is any way of permanently getting rid of the annisc weed. A friend of mine has a lot in the suburbs here which is covered with this weed. In the summer when the seed is ripe the wind scatters the seed all over the neighborhood, causing the neighbors to complain. To hire someone to pull up all these weeds is very expensive (as she has done this for the past two years), and still the weed continues to grow.

If there is any way of getting rid of this weed I would thank you for the information.—M. O., Oakland, Cal.

Simply removing these weeds once during the season does not kill them out. They must be kept so that no green material shows above the ground for at least eighteen months. The annis is a root spreader. By this method of removing all green portions and not allowing any nourishment to go to the roots, the roots can be killed. Constant cultivation or use of a weed cutter or weed knife is the only method by which the weed can be destroyed.

I WISH to be advised in your next issue of "Orchard and Farm" if there is any remedy for preventing wild jack rabbits from eating prune trees. My trees were set out last winter and headed twenty-four inches high. After the trees put out limbs the rabbits ate them off as fast as they grew out, and what is still worse, they stand on their hind legs and cut the top out of the tree and eat all the leaves off. They keep this up all summer, and now they are eating off the dormant buds and what stubs of limbs are on the tree. I put protectors on trees when I planted them and also whitewashed above protectors. Thanking you for any information you may confer, I am—C. J. B., San Martin, Cal.

Numerous efforts have meen made to develop some material which, placed upon the trees, would deter the rabbits from gnawing them. None of these materials have proved at all successful, and the problem reduces itself to one of getting rid of the rabbits altogether. This must be done by either rabbit-proof fencing, the use of dogs, or the shotgun No other practical methods exist for holding down this nuisance.

PLEASE give me all available information concerning Feterita. Where can seed be obtained? Is it a suitable forage crop for northern California coast counties? What is its value for dry fodder? For ensilage? What is the most satisfactory forage crop for Marin county?—J. T., Corte Madera.

It will be a difficult matter indeed, for you to obtain seed for this crop at the present time. It may possibly be obtained through your Senator or Representative in Washington.

It is a crop that is best adapted to the dryer, hotter valleys of the State, and probably not desirable for the northern coast counties. Its value for dry fodder is about that of kafir corn or milo maize, and for silage and ensilage it has about the same value as these other materials. It is high on the carbo-hydrate side and can thus be used in conjunction with the nitrogen carrying feed, such as alfalfa or some similar crop.

The question of the most satisfactory forage crop for Mendocino county has not been worked out. However, a very considerable amount of success has been obtained in certain parts of this county by using a combination of rye and vetch (vicia sativa). This should be sowed at the rate of about forty pounds per acre. The vetch, which is of high nitrogen value, uses the rye to climb up in, and is thus kept off the ground, allowing the easy use of the mowing machine. This combination hay is very satisfactory, indeed, for dairy animals and for work animals.

After the crop has been cut the rye and the vetch makes a second growth, furnishing a very satisfactory pasturage, indeed. Of course, this crop has to be seeded each year.

PLEASE tell me what to use to eradicate curly leaf on peach and apple trees? What is the best time to prune trees, and instructions how to prune trees of this description? Will slips of Logan berry put in now bear fruit next summer? Please have this appear in your January number. —Dr. J. M., 4318 Gilbert street, Oakland, or 1519 San Pablo avenue.

For curly leaf on peach spray with Bordeaux mixture just before the leaves open, or while the tree is dormant, and again when fruit is formed.

"Curly leaf" of apples caused by aphis attack. Spray with "Black Leaf 40" when aphids first appear.

Apple and peach trees should be pruned when dormant. Apple trees should be so pruned as to remove crossing branches and to allow light and air to reach center of trees.

Peach trees bear on wood of previous year's growth. So prune as to remove as little as possible of this new wood. Keep centers open to air and sunshine.

Logan berries are propagated by layering the shoots in summer time. That is by bending down the tip and covering with earth. In the spring the branch is cut loose from main vine and the rooted set is ready to transplant.

WILL you favor us with a few lines of information on correct culture of horse radish.—J. A. C., Alameda.

For quick growth plant roots, or sets, of horse-radish in loose, rich, sandy loam, or good well-tilled garden soil having warm exposure. Give good cultivation and during dry summers some irrigation. Plant roots, or sets, in rows two fet apart, one foot apart in the row, and cover three or four inches deep. Roots, or sets, may be obtained from any reliable seedsman, or small rootlets may be broken from roots when dug for use, then stored in moist sand until rooted, then used for sets.

Successful Berry Growing

—By M. J. Moniz, Manager Barlow Ranch, Sebastopol—

PERHAPS it may seem like an easy matter for some people to grow berries, but to grow them in a proper manner to obtain the real profits and results is a problem that has been hard to solve by a great many who have gone into the culture of this product.

In preparing soil for berry plants plow deeply—at least ten inches. Go over the ground several times, cross-plowing each time, and between plowings go over the ground with a harrow.

The soil best adapted for berries is a loose, sandy loam, or sub-clay, rather well drained. This is especially well suited for Logan berries. Mammoth berries will stand a much more moist soil, provided it is not sour. Lawton berries will also stand a fairly moist soil

If you plant Lawton berries be sure that you get strong, well-rooted plants, and plants rooted in a field in which no other but the Lawton grew. Put them eight feet apart each way in rows and plant eight inches deep. Press the soil firmly about the roots, but leave a little loose dirt on top to act as a mulch. Cut the tops of the plants back to six inches above the ground to assure a strong growth of new canes for the next season.

For plants of the Logan and Mammoth berries I prefer the rooted tips. Cover the ends of some of the runners, or vines, several inches deep early in the fall and let them remain two or three months, or until they show well developed roots. Some people use one and two year old plants, but I prefer planting the rooted tips, as I have found them to make better headway after planting. Plant in rows eight feet apart, but for the Logans put ten feet apart in the row. I find better results from the Mammoths if put twelve feet apart in the row.

Use care in planting the Logans and the Mammoths. Dig a hole large enough so that the roots will be well distributed. Do not bunch them. Press the dirt well around them with your hands, and always leave loose dirt on the surface so the ground will not pack and dry around the plants.

The time of planting depends greatly upon the condition of the ground. In the berry districts of Sonoma county January is a good time in which to plant, though good results are obtained if the work is done later in the season. The soil should be moist, but not wet.

Very little pruning is necessary during the first two years of the plant's life. They do not reach full bearing growth until then. In pruning the Lawtons cut all new canes that grow up in the summer back to a height of two feet during the first year. Let them be three and a half feet the second year and four and a half feet the third year. After that keep them at the latter height. Cut back the side shoots to about fourteen inches in length. A good deal of this work can be done in the summer time and it should be completed about August 1. There will not be very many side shoots, or laterals, until after the second year, when the vines are almost full grown. In the second year, soon after December 1, cut out all the old wood, that is the wood that produced the crop the previous summer, leaving the new canes. There should be then about three canes to the hill. In the third year there should be six or eight canes. Prune the side branches and laterals, which are then about ten inches in length. Cut off about a quarter of their length. It is a good practice to burn the pruned wood. During the second year the Lawtons should be staked.

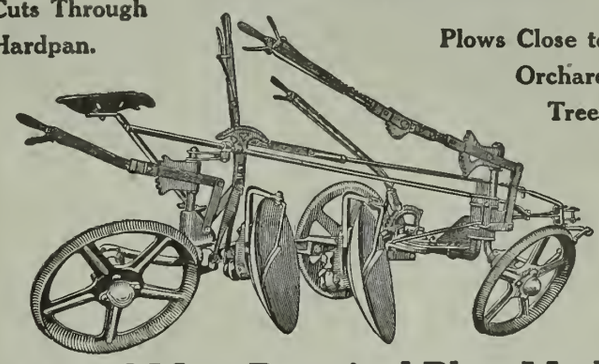
The pruning of the Logan berry and the Mammoth berry is much more simple. There is very little to do the first year, but after the second year all the old wood should be cut away. A good practice is to cut up the wood removed and scatter it between the rows of plants and plow it under. It serves as a fertilizer. This wood should be removed as soon as the crop is harvested. This gives more vitality to the young runners and allows them to make better growth. These two varieties put out runners much like the wild blackberry. These should be trained on trellises. Drive good strong stakes firmly along the rows and stretch wires on the stakes. One wire about three feet above the ground will do for the first year. Divide the runners each way from the plant along the wire. During the second year stretch a second wire about a foot and a half above the first wire. There will now be a great many runners from each plant Divide these into four and train them each way along the two wires.

MADE BY BENICIA IRON WORKS

BENICIA ORCHARD DISC PLOWS are the choice of the Pacific Coast Farmer.

Cuts Through Hardpan.

Plows Close to Orchard Trees



Best and Most Practical Plow Made

Contains every feature which is best suited for California Orchard work. The only disc plow available for use behind a small-tractor—one man operating both tractor and plow. Discs can be changed in few minutes and can be regulated to plow any desired depth (down to 10 inches) and width (to 12 inches)

The Benicia Orchard Disc Plow

won't tip over and rides easy as a wagon. All parts are guaranteed and will stand the hardest strain. No trouble or breakage on account of loose nuts, as special lock washers are used

Write for Illustrated Literature

BENICIA IRON WORKS

453 Brannan Street San Francisco, Cal.

"New Way" RAPID POWER SPRAYERS

Work Perfectly on Hillsides.

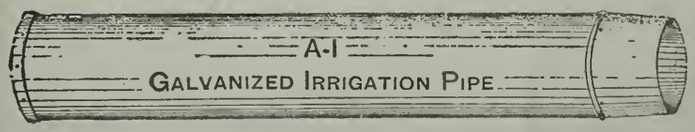
FOR THE LARGE FRUIT GROWER
FOR THE AVERAGE FRUIT GROWER
FOR THE SMALL FRUIT GROWER

Beautifully Illustrated Sprayer Catalog—Free!

JOHN DEERE PLOW CO. San Francisco

Don't Waste Your Water

Dirt ditches waste water by absorption, seepage or evaporation. Surface irrigation pipe saves all your water; places it where you want it. By its use you never get oversupply in one place and undersupply in another.



is the strongest service irrigation pipe made. It contains no riveted seams to spring or break and cause leakage.

A-1 GALVANIZED IRRIGATION PIPE is a portable pipe—has tapered ends making it easy to connect or disconnect different lengths.

It is made with a lock seam—without solder and without rivets—the seams brought together and locked under heavy pressure.

You can pump water to any of the high places on your farm, which saves considerable cost in leveling the ground or where conditions make leveling impossible.

A-1 GALVANIZED IRRIGATION PIPE is strong and made of heavy galvanized pipe. It will last for years and withstand rougher usage than any other pipe.

It is made in all sizes and in one length—10 feet.

SEND FOR BOOKLET O. F.—It contains many valuable suggestions to you about the uses and services of irrigation pipe and gives you pointers for irrigating your farm that you probably would never have thought of. It gives a detailed description of the construction of A1 Galvanized Irrigation Pipe together with the different sizes in which it is made.

Ames-Irvin Company

8th and Irwin Streets San Francisco, Cal.

"Orchard and Farm" guarantees the reliability of its advertisers.

Conserving Our Soil Fertility

By Dr. Charles B. Lipman

HE who has to deal with California soil cannot, without paying dearly for his neglect, ignore the cause of the formation of our justly celebrated deep soils which gives us the key to our modern conception of rational soil development in the arid region. This important fact is the manner in which clay is formed and how such clay formation differs in arid and humid regions.

Clay is largely formed from two of the most common and most widely spread minerals of the earth's crust, namely, potash and soda feldspar, which are respectively compounds of aluminum with potash and silic acid and of aluminum with soda and silic acid. Now potash and soda in these two feldspars are easily leached out under the action of rain and other forms of water which descend upon the earth, the aluminum silicate, being practically insoluable, remaining behind, and that is clay. The largest amount of clay is formed where leaching and weathering agencies attacking the feldspars of soil material are most active and potent.

In soil in which clay forms more slowly the particles are much less cemented than those in which the clay forms rapidly. Therefore, soils of the former type must be looser and partake, when considered by and large, of more of the sandy soil structure than of the clay soil structure. But why, will be asked, does a greater or less amount of cementation of the soil particles through more or less clay formation, so markedly influence the soil structure?

The answer to this question is simple. It determines to a considerable degree the amount of air which can be held by the soil and still more markedly the amount of air which can penetrate into the depths thereof.

Again it is asked, how does this difference in air penetration account for such a striking difference observed between the soils of the humid and arid regions?

In just this way. Air makes possible the proper activities of three of the essential agencies to successful and healthy plant growth, namely; proper root development of plants; proper development of the denizens of the dark recesses of the soils in numbers and efficiency—the bacteria, fungi and others and the proper oxidation and solution of soil minerals which are used as plant food.

In just such measure, therefore, as air is admitted to the soil depths will conditions therein, other things being equal, be made congenial for the development of these powerful agencies in the regulation of a plant's development. Moreover, in just such measure as we contribute by artificial means to the greater or less penetration of air into the soil depths do we contribute to the greater or less efficiency of the agencies named; in the former case augmenting, in the latter, defeating the purposes to whose end the natural agencies described above are operating.

We should expect that in soils of the arid region, owing to slow clay formation, the interest of many generations of plants is best subserved because deep root cultivation is made possible, not only for the reason that the roots themselves can obtain the necessary air supply, but because the other agencies named, and which are concerned in a large measure with the welfare of the plant, are also made to operate efficiently.

We value deep soils so highly for purposes of making possible a large and deep root development on the part of the plant. It is only reasonable to expect that a plant that has twice as many water films to draw on, because of its superior root development, should obtain its food and water with greater ease and have twice the amount at its disposal. A deep root development, therefore, makes possible under our climatic conditions the utility of the greater depths of the soil which we own, as much as the surface; and by making the surface soil more lasting in its fertility and placing a more adequate supply of food and water at the plant's disposal, serves as one of the greatest blessings of him who grows crops for profit.

The six most important considerations in California soil fertility are:

Deep plowing of our soils.

Prevention of formation or breaking up of plow-sole.

Irrigating in deep furrows.

Deep incorporation of manures and fertilizers.

Frequent summer cultivation.

Green manuring and maintenance of the humus and nitrogen supply.

There is many an orchard in the State in which two inches of rain water saved by a deeply plowed soil as against alike amount lost by a similar soil plowed shallow have spelled the difference between profit and loss during the last year. It is thus by throwing open a much larger surface of soil particles for catching rain and irrigation water that deep plowing acts as one of the most potent methods of moisture conservation that we can employ. In addition, it makes possible the more active bacterial development at great depths in the soil, and more rapid weathering of the soil minerals, therefore increasing the available food supply, and the much deeper root development of the plant. Who can truthfully say, in view of these arguments, that it is possible to overemphasize the importance of deep plowing in California soils?

As to the proper depth to plow under different conditions, I want to say that in an orchard it may vary from eight to ten inches, depending on the nature of the soil and other circumstances regarding tillage operations on the ranch. The greater depth is to be prefererd. There is no necessity for changing suddenly from a shallow to a deep plow depth. It would suffice gradually to attain that condition recommended by plowing an inch or two deeper each succeeding season. Moreover, with such methods of plowing pursued, but one plowing a year will suffice to render the soil one of proper air and moisture conditions.

Plowsole in soils is produced by plowing at the same depth year after year, or through the washing of fine clay and silt into the soil by irrigation or rain. Air passes through the plowsole layer only with the greatest difficulty and water likewise can percolate but slowly through it. If this condition is allowed to continue for any length of time in a soil the result will be that the roots will tend to come to the surface for air, warmth and more available food and we gradually produce from a naturally deep soil an artificially shallow one.

Plowsole shrould be broken up with a subsoil plow if it is already formed. Three or four furrows between two rows of trees will improve conditions markedly. If the plowsole is thin it may be broken up with an ordinary deep plowing with a moldboard plow. To prevent the formation of a plowsole change the plow depth from year to year, and break up the compacted and silted bottoms of irrigation furrows instead of merely covering them with loose, dry soil.

These remarks on the prevention and breaking up of plowsole and irrigation hardpan have for their principal purpose the more adequate operation of the deeper soil layers so

You can now get

Burbank's Goldridge

APPLE

for your orchard

The Burbank "Gold Ridge" has never before been offered the public. It is pale yellow with a crimson blush, smooth and perfect; an early ripener; ripens with the Baldwin and other winter apples.

The tree is strong, a good grower and the fruit finer, larger and more succulent than its parent, the Newtown Pippin.

This is but one of the new creations of Luther Burbank described in our 1914 nursery catalog. Send for this book at once—familiarize yourself with the big revenue-producing original Burbank novelties—berries three inches in circumference one way by four the other; cherries more than three inches in circumference with a very small pit that sold for $3.10 per pound wholesale. You will find described in this catalog the giant plum, the stoneless plum and a plum which bears profusely when most others fail. Also hundreds of other varieties of fruits, berries and plants. To be familiar with them is an education in itself. To take advantage of them means increased profits on your output. Remember, it requires as much time and labor to grow ordinary productions as these sure money bringers. We are now prepared to furnish anything required in the seed and nursery line in addition to the original Luther Burbank productions—citrus trees, ornamental trees, shubbery, potted plants, evergreens and all the standard varieties of fruits. Write for our 1914 catalog 0. F

The Luther Burbank Company

Sole Distributer of Luther Burbank Horticultural Productions

Burbank Building
SAN FRANCISCO

WARNING—To be sure of obtaining original Luther Burbank productions, look for the seal on all purchases you make. None genuine without it. This is a protection to you and one to which you should give heed.

STABLE MANURE FERTILIZER

Write for quotations. Address

TAYLOR STREET STABLES, North Point and Taylor Sts., San Francisco

Honest Nursery Stock

means more than merely a live tree or plant. It means more than a good root or a good top. It means nursery goods with the best efforts, best knowledge and best brains of the grower back of it, to insure the planter highest results. Our stock is that kind. We stand and are known for quality in Nursery Stock and for service to our customers.

Our specialties are Deciduous Trees, Fig Trees, Grape Vines and Hardy Ornamentals.

Complete descriptive catalogue sent you for the asking.

The FRESNO NURSERY CO. INC.

HONEST NURSERY STOCK

1824 Tulare St., Fresno, Cal.

as to make in them more congenial condition for the development of plants' roots and to prevent the massing of the feeding roots at the surface of the soil, where both the food and the water supply may soon become insufficient properly to maintain them. A similar purpose attaches to irrigation in deep furrows. By means of the latter but little of the irrigation water wets the surface.

No fears need be entertained as to the effects of subsoiling or deep plowing on trees growing in soils which have already been plowed shallow.

With respect to manures and fertilizers, which are the carriers of plant foods to the roots, the same rule holds as to the air and water supply. I am constrained, therefore, to recommend consistently that manures and fertilizers be deeply incorporated in the soil.

Perhaps nothing else in our farm practice can be said to be attended with such striking results as the mulching soil for the purpose of moisture conservation.

The purpose of the mulch consists merely in having something on the surface of the soil which will act as a blanket and prevent the dissipation of soil moisture as it is brought to the surface by a combination of physical forces. It follows, then, that the best mulch must be the one that is the cheapest and most feasible to employ in soil management, and at the same time is efficient in moisture conservation.

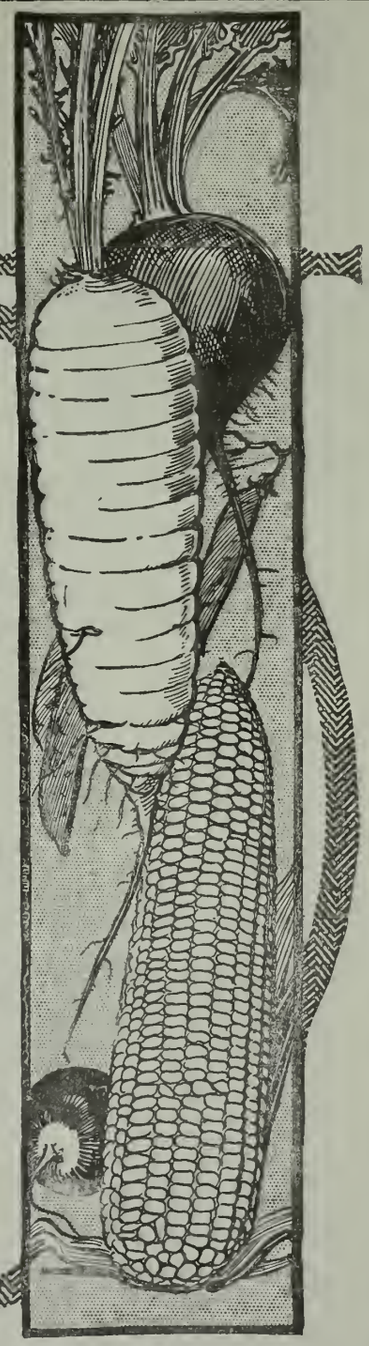
There are only two materials that could possible answer to such description under ranch conditions. These are the straw mulch and the dust mulch. From recent experiments in this State by fruit growers I am inclined to class straw mulching with dust mulching as a thoroughly practical method and particularly for orchard conditions even on a rather extensive scale. Not only can we conserve more water by using the straw mulch, but we can conserve the humus of the soil by decreasing the rate of oxidation of organic matter, and we can also eliminate other mischief to the soil which constant cultivation with heavy tillage instruments, necessary in preserving an efficient dust mulch, is bound to entail. The straw used should preferably be that from legumes, such as lima beans, and have the merit of cheapness, efficiency as a water and humus conserver and as a valuable material for humus formation and nitrogen addition.

But we can always fall back on the old reliable dust mulch, which, under all conditions, is feasible and destined to remain, perhaps forever, the most widely used method of mulching which we know. I recommend that at least a five-inch dust mulch be maintained on the soil's surface to conserve the moisture. Light tillage instruments should be employed.

Citrus By-Products

One of the most educational features of the National Orange Show, which is to be held in San Bernardino, February 18 to 25, will be an exhibit of citrus by-products, both factory and home made. By-product manufacturers will be in charge of one department of the exhibit, and housewives will preside over the other department. Marmalades, desserts, extracts, candied fruits, oils, flavorings, salads, acids and vinegar will be among the exhibits, to demonstrate that the cull oranges and lemons, which are not good enough to pack and ship, are, nevertheless, worth hundreds of thousands of dollars annually to the citrus growers of the State. The idea of educating the public in the matter of utilizing cull citrus fruit has the indorsement of the government as well as the enthusiastic support of every man in the State who has played a prominent part in the upbuilding of the great citrus industry of California.

MORSE'S
Garden Guide
for
1914



a book that should be in every home.

It is the best and most comprehensive compilation of vegetable, flower, tree and plant knowledge we have ever issued. It is liberally illustrated and gives explicit and plain instructions as to the planting of seeds, trees, plants and bulbs.

There is no charge for this book. It will be mailed free to any address.

The Product of Morse's Seeds is Unexcelled

We are the largest seed dealers on the Pacific Coast

HEADQUARTERS ALSO FOR

Alfalfa, Grasses, Clover, Etc.

Our products are selected and grown with extreme care. We aim to produce the best in everything we grow.

Our standard varieties of seeds in all good stores. The name "Morse" connected with a seed, bulb, tree or plant is a guarantee of excellence.

SEND FOR MORSE'S 1914 GARDEN GUIDE NOW.

C. C. MORSE & CO.
109 Jackson St., San Francisco

LIVESTOCK
BREEDERS
—AND—
OWNERS

Have You Livestock You Want to Sell?

Do You Want to Buy Livestock?

ORCHARD AND FARM keeps in close touch with the breeders of pure-bred stock on the Pacific Coast, and it offers you co-operation in your efforts to

BUILD UP YOUR HERD

or to dispose of your surplus stock.

Livestock is the life of the farm. Orchard and Farm gives you valuable hints in every issue on its care and management. Our new livestock folder will be sent free on request. It contains something every farmer and breeder should know.

Address Livestock Department

ORCHARD and FARM

Hearst Building San Francisco

California Animals Win at Northwest Show

By F. H. Grinnell

TO Portland belongs the honors of holding the first fat stock and dairy show in the United States, which was given under the management of the Pacific International Live Stock Exposition, and brought to a close Saturday, December 15. The show was a monster success and as a result, it will be made a permanent affair, which bids fair to become as great if not greater than the great National Live Stock Show, held at Chicago each year.

Junior Champion Holstein, bred and owned by the University of California.

The exposition just closed marks an epoch in the cattle industry of the Northwest. There was a total of 3,000 animals shown, owned by 850 exhibitors.

Some exceedingly high prices were paid for stock auctioned, the highest price being $852.50, by the Union Meat Company for the grand champion yearling steer bred, raised and exhibited by the University of Idaho.

The dairy stock, however, was the main attraction for the buyers and the highest price offered was $825 for a 2-year-old Holstein bull by F. S. Stinson of Hollywood to the Munroe Company of Spokane. W. F. Royce of Tacoma paid $735 for a junior bull to the Munroe Company. Mr. Stinson paid $700 for a Holstein cow.

Among the fine dairy stock on exhibition was the $10,000 Ayreshire bull, "Peter Pan," owned by J. W. Clise of Seattle, a $5,000 Holstein cow exhibited by the Munroe Company of Spokane and the grand champion heifer of the National Dairy Show, a beautiful Jersey owned and exhibited by J. B. Stump & Son of Monmouth, Ore.

While the cattle were, of course, the main attraction, and the dairy stock the more interesting of the two classes of cattle, the sheep and hogs attracted considerable attention and competition for the awards in the various classes was very keen. Some exceptionally fine specimens were seen.

Peter Pan was really the main attraction of the show and had no trouble in taking all the awards in the Ayreshire class. He was brought from Scotland three years ago by J. W. Clise after it had defeated everything else of its kind in Scotland, and two years ago it took the grand championship at the national show at Chicago. One of his get won the 3-year-old championship and another the 4-year-old championship at the National Dairy Show. A few months ago one of his 2-year-old cows made the world's record for milk production. He is a great show animal and seems to realize his importance.

In the Guernsey class, Sanders & Butler, who came the greatest distance to compete, took off first honors with their herd. They took the senior champion and grand champion bull award, the senior champion cow or heifer award, and the grand champion cow or heifer award. A. L. Gile of Chinook, Wash., was his competitor for championship honors and took the awards for the junior champion heifer. Sanders & Butler took the award for the best herd in this class.

The results in the Jersey displays were a surprise to many stock people, who expected the bull exhibited by J. B. Stump & Son to take the grand championship honors, but instead, G. G. Hewitt carried off the coveted honor. The Stump bull won the senior championship and the championships in the cow or heifer class, junior champion heifer class and the grand champion cow or heifer class. In all, Stump's herd was a marvel and the feature was, of course, "Ula of Fairacres," the champion heifer at the national show.

The Munroe Company of Spokane was the biggest exhibitor in the Holstein class. The company secured the junior champion bull award, senior champion cow or heifer award, grand champion cow or heifer award, second in the young herd class, third in the calf herd, and first in the group class.

W. K. Newall of Gaston won the senior champion bull and the grand champion bull award. The University of California, which exhibited a fine herd of Holsteins, won the junior champion heifer award. The university also took the first award for the best calf herd.

In the Shorthorn classes, A. D. Dunn of Wapato, Wash., won the senior champion bull award, the grand champion bull award, senior champion cow or heifer award, junior champion bull, junior champion heifer and grand champion cow or heifer awards. He won against two other exhibitors.

In the Hereford class, A. B. Cook of Helena, Mont., won the senior and grand champion bull awards, the senior and grand champion cow or heifer awards and junior champion heifer award. The University of California won the junior champion bull award. Cook won the aged herd, young herd and calf herd awards.

In the fat sheep classes, for wethers one year and under, the University of Idaho took all awards, while in the wether lamb class, it took the first award with the University of California second, and the University of Oregon third and fourth. The champion wether in the above class was won by the University of Idaho.

In the Cotswold Sheep class, F. A. Koser of Rickreal, Ore., and Riddell & Son of Monmouth, Ore., were the only exhibitors. Koser won the champion awards for all classes of this stock.

In the Hampshire Down Sheep class, the exhibitors were Ed Schoel of Albany, Ore.; W. K. Newall, Gaston, Ore., and the University of California. In this exhibit, the University of California was as easy winner in all championship contests.

In the Shropshire sheep class, C. E. Cleveland of Gresham, Ore., the Oregon Agricultural College, and Knollin & Finch, Soda Springs, Idaho, were the only competitors and divided honors about equally. Knollin & Finch took the championship awards,

In the Oxford Down class, William P. Emery won the championship awards. W. W. Cleveland was the only exhibitor in the Dorset Horn class and took all awards. The same condition existed in the Angora goat display, which was given by Riddell & Son of Monmouth, Ore.

The fat swine exhibitors were among the keenest contestants in the show and a very keen rivalry existed among them, especially in the Poland China classes. J. H. Trout of Parma, Idaho, won the Kidwell & Caswell cup for the grand champion carload of hogs.

The Durac Jersey Swine senior boar championship went to G. M. Harvey of Salem, the junior champion boar to C. S. Magee, McMinnville, Ore.; the senior champion sow, grand champion boar and grand champion sow to Harvey and the junior champion sow to Magee.

The Poland China swine championships were taken for the most part by R. W. Hogg of Salem. To him was awarded the prizes for the grand champion boar, junior champion sow and grand champion boar. H. Willard of Dayton, Wash., was awarded the prize for the grand junior champion boar and F. P. Farrington of Salem won the senior champion sow and grand champion sow awards.

Junior Champion Hereford Bull, bred and owned by the University of California.

THE University of California had an exhibit of seventeen animals at the Pacific International Live Stock Show during the past month at Portland, and they were awarded a total of twenty-four prizes, including five championships, seven firsts, ten seconds and two thirds. Only one animal failed to get into the money and the two thirds were awarded in classes where the university had already taken, in one case first and in the other case first and second moneys. Fifteen of the seventeen animals exhibited were bred at the university farm at Davis, the only exception being young Guernsey bulls from the Fernridge herd recently purchased by the University from J. H. Mackenzie of Yuba City. The Hereford steer, University Joe, which won second for the university in the 2-year-old class for fat steers, was purchased by a representative of the Western Meat Company of San Francisco. This was an unusually tidy steer, although showing at a disadvantage in age, being nearly a year younger than his winning competitor.

The pure bred yearling Aberdeen Angus steer that was champion of the California State Fair was included in the university exhibit at Portland and was probably the popular ringside favorite for premier honors of the show. The Angus breed, however, is not well known up the coast and the unusually good Short Horn steers shown by the Idaho Agricultural College were stronger in their appeal to the eyes of the judges, two of whom were Short Horn breeders. The junior champion Hereford bull, Hopeful Prince, shown by the university, attracted much attention and was considered a worthy competitor of the famous Fairfax 16th, recently added to the Cook herd in Montana, for grand championship honors. Among the Holsteins, the four calves from the university undoubtedly attracted the most attention, one of the heifers being made junior champion of the show and later sold to an Oregon breeder for $500. Eight lambs, constituting the California contribution to the sheep show, won every award but one which it was possible for them to have gained.

"Peter Pan," the grand champion Ayreshire Bull owned by J. W. Clise of Seattle.

Freeing Hogs From Vermin

By L. S. Wallace

WHILE lice are usually worse in the winter, and especially toward spring, there are many bunches of hogs now on summer pasture that would thrive much better if they were rid of the parasites they are carrying. When hogs have a rough and scaly skin, and lice are present in considerable numbers.

Permit lice to infest hogs for a while, and the first you know the skin will be rough, scaly and inclined to eruptions I use crude petroleum or a solution of carbolic acid to kill the lice, and as soon as they are gone the skin will heal without further treatment.

It is best to have a dipping vat. While it may not be used for some months at a time, it is the best and simplest way of ridding the herd of any parasitic disease But the hog wallow can be utilized when the dipping vat is not handy. I have used water holes where the hogs lie on hot days in much the same way as the vat is used.

All that is necessary is to keep the surface of the water in the wallows and the hog holes covered with a layer of oil. A film of oil will not be sufficient. Put enough on to make it possible for every hog to carry away a coat of it when he leaves the wallow.

Where there is no vat, and where the hog wallow is not used, the oil may be used by digging a hole from 15 to 18 inches deep and sinking a shallow tank there. Put in the oil and the water. The oil will cover the surface, and every hog that gets in the tank will get an oil bath. A single dip in the tank will cover the porker's body with an oil film, and this will soon finish the lice.

Where neither the vat, the wallow nor the temporary tank can be used, the spray pump is satisfactory. I have used both crude oil and crude carbolic acid in them. They cost but little. A good tin spray can be bought for something less than a dollar, and will kill lice as effectively as one costing ten times that amount.

A mixture often used for lice killing in the spray pump is made of one-fourth crude oil, one-fourth machine oil, the heavy kind used as a lubricant, one-fourth gasoline and one-fourth plain coal oil. When spraying the hogs they should be put in a pen and the mixture sprayed on them from above.

Hogs that are lice infested will not make the gains they should, and especially in the case of young animals, the parasites will hinder flesh-making and growth.

Black Hawk Stock Ranch

For Sale—SHIRE STALLIONS ranging from two years up. Also MARES in foal. Breeding and quality unsurpassed. Prices right and inspection invited. Correspondence given prompt attention.

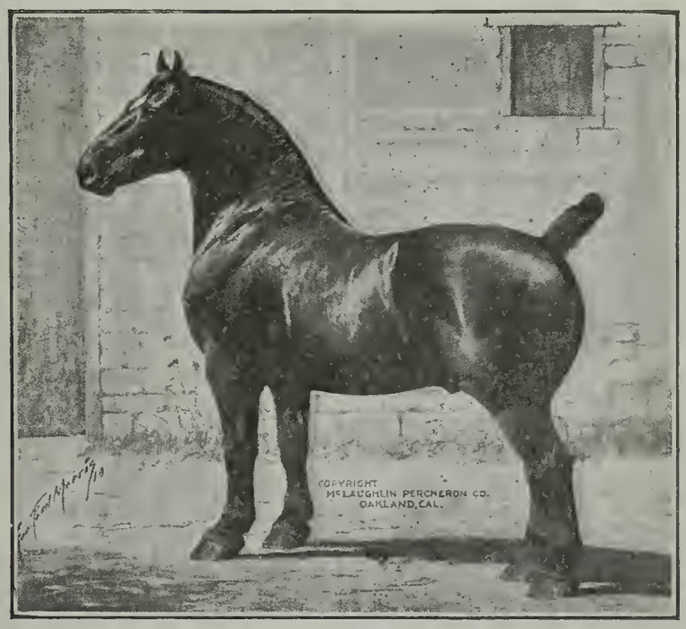
Address:

A. W. WARD

Burlingame, Cal.

America's Leading Horse Importers

PERCHERONS



A Famous Prize Winner. One of Our Recent Importations

At the recent California State Fair our stallions won every possible prize, including every championship.

When you want the best, let us hear from you.

Western Stables, 47th and San Pablo Ave., Oakland, Calif.

McLAUGHLIN PERCHERON COMPANY

Nurserymen for Forty Years

26 YEARS IN CALIFORNIA

Wholesale propagators of first-class trees and vines.

420 Acres in growing nursery stock in **Fresno, Madera** and **Tulare** counties. Three million trees, two million vines. Every plant propagated from heavy-bearing parent trees and vines.

Planters will find it worth while to look over varieties of **Peach, Apple, Apricot, Olive, Plum, Prune, Pear, Orange, Lemon,** and other fruit trees, also good assortment of shade and ornamental stock.

Write for Catalog—Send at once list of your requirements for our estimate.

Kirkman Nurseries, Inc.

Main Office
TULARE AND N STREET,
FRESNO, CAL.

The Very **Best** None Excepted

Spray Pumps

Do not buy before investigating our claims.

Because—Greater Volume at 1-3 the Power Saved.
No Plungers or other Packings.
Positive Delivery—No Valves.
No Springs—No Cams.
Weighs but 60 pounds.
Good for Years of Service.
Can be attached to any outfit—small expense. State make and size.

We Build

Deep Well Pumps

Pressure, Priming and Vacuum Pumps; Blowers and Compressors.

⅓-½ Less Power

"We pump where others fail."
All Sold on Positive Guarantee

WRITE TO-DAY

Baker-Hansen Mfg. Co.

744-758 Park Ave.
East Oakland, Cal.

Salvador Stock Farm
Shire Horses

If you expect to be in the market for a stallion and want a good one, it is time you looked into the matter.

HENRY WHEATLEY, Napa, Cal.

FREE 1914 SEED CATALOG

OF INTEREST TO EVERY RANCHER

1,000 QUESTIONS ANSWERED

160 Pages Invaluable to the Gardener, Rancher and Poultryman. 500 Illustrations

- Write for it to-day -

AGGELER & MUSSER SEED COMPANY
113-115 NO. MAIN ST. LOS ANGELES, CAL.

MARTINEZ NURSERY

ESTABLISHED 1884.

Offers the following varieties in strictly No. 1 Trees: 25,000 Bartlett Pear, 10,000 Apple (leading varieties). Autumn and Winter Pear, also Plum, Prune, Peach, Apricot and Almond Trees, Grape Vines, Ornamentals, etc. Price List on application.

THOS. S. DUANE, Prop.

Martinez, Cal.

12 EVERBEARING STRAWBERRY PLANTS FREE

Yes, ABSOLUTELY FREE! This is simply to introduce our wonderful **Productive Strawberry Plants** Produce great crops of fine extra large, delicious strawberries all summer and fall. Fall bearing strawberries are in great demand. Here's your chance to get 12 nice, thrifty plants, also our Three Color Catalog, FREE. Your name and address on a postal will bring them. Plants sent prepaid in proper planting season.

BRADLEY BROTHERS
118 Main St. Makanda, Illinois

BRADLEY BROTHERS MAKANDA, ILL.

Save Money on Paints and Wall Paper

All high-grade House Paints, **$1.45** per Gallon.
Roof Paints and Shingle Stains **75¢** per Gallon.
We pay the freight to your railroad station on all orders of $5 or over. Write for our special color card and wall paper samples.

Pacific Paint & Wall Paper Co.,
2007 San Pablo Ave.,
Oakland, Cal.

BIG MONEY in the OFF SEASON

One Man can run it.

Earn $2000.00 a year extra money, besides your regular farm work, with the **Improved Powers Boring and Drilling Machine.** Bores a well 100 ft. deep in 10 hours. One man can run it; a team operates it and easily moves it over any road. Bores everything except hard rock, and it drills that. No tower or staking, rotates its own drill. Easy terms; write for catalog.

Lisle Mfg. Co.
527 Third St.,
San Francisco.

EVERYTHING FOR THE BUILDER

Bargains in Building Material
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper etc., at the lowest prices.

Carload Lots a Specialty.

H. McKEVITT & SON
1849 Mission St.
Nr. 14th St. San Francisco

Rhubarb for Profit

A FREE BOOK ON
Rhubarb Culture
Free for the asking; $1,000 profit. Now best time to plant.

J. B. Wagner, Pasadena, Cal.
The Rhubarb, Berry and Cactus Specialist

ELEGANT Thin Model 20 YEAR Watch $3.50

Hunting case beautifully engraved, gold finished throughout, stem wind and stem set, fitted with jewel adjusted movement, guaranteed a correct time-keeper, with long gold finished chain for Ladies, vest chain or silk fob for Gents.

STEM WIND STEM

HUNTING CASE SET

IF YOU SEE IT YOU WILL BUY IT. Let us send it C.O.D. for examination at your express office, and if you think it a bargain and equal in appearance to any $100.00 gold finished watch pay the express agent our special sale price **$3.50.** Our 20 year guarantee sent with each watch. Mention if you want LADIES', MEN'S or BOYS' SIZE. Address **Diamond Jewelry Co., C22, 189 W. Madison St. Chicago, Ill.**

How an Expert Handles Brood Stock

—B. C. Mahoney—

IF handling a subject daily for half a century should make a person authoritative along a certain line, then Henry Miller, California's greatest stockman, should know a thing or two about mares and colts, owning as he does several thousand head.

In the first place, Mr. Miller believes that all mares should be bred early in the year, so that the colts will be born in the early spring and thereby enabling the mother to eat green grass and keep up a strong milk flow, and also the colts will learn to eat so much quicker when the grass is fresh and green.

After the mare is in foal three things are essential, says Mr. Miller; plenty of feed, exercise and kind treatment. Extra feed is required to keep the mare from running down, and the unborn colt needs nourishment. If the brood mare is not working she is allowed to run in the pastures so as to get green food and also exercise. But when a brood mare is worked only careful, competent men should drive her. If there is no man available that can be trusted with such an animal, she goes idle first. Anyone found whipping or jerking a brood mare is discharged. When the mares are worked in the fall, the lightest work is picked out for them. And when at noon or night they come in from the fields, if they are the least bit warm, they are put in a stall and given a feed of bran and hay until they cool off, after which they are watered. For mares with foal if watered while warm will frequently slough their colt. During the rainy weather when it is impossible for days at a time to work the horses, the allowance of crushed barley is cut down so that mares will not get too fat. At this period also, they are given the run of the pastures. After brood mares have been idle a considerable length of time, Mr. Miller is careful to see that they are not worked very much at first, as they are liable to get overheated. The work is gone at gradually and there is no danger of them losing their colts. After the mare gets far along in foal, she is worked very lightly, if at all. Although sometimes a big healthy mare is worked right up to the time of foaling, and with no bad results.

After the colt is born the mare is given alfalfa hay, bran and oats if possible, and allowed to run in the pasture. Mr. Miller believes in giving a colt all it can eat from the day it is born, consequently, he aims to develop as much milk in the mare as possible. He has seen too many puny, stunted horses that had they been fed right when young, they would have weighed a few hundred pounds more as four-year-olds. "A colt," he says, "has the greatest capacity for growth during its first year and it should be fed generously." A colt if handled properly its first year will weigh at the end of twelve months half as much as it will when full grown, and at twenty-four months should weigh three-quarters of its full weight. But to attain this it needs good wholesome food.

In a week or so after the foal comes the mare is put in the harness again, but always under a careful driver; that is, of course, if the mother and colt are healthy, where the colt is small or the mare is not doing well, they are put in a barn and given bran and hay, and in good weather are allowed to run in pasture during the day. There are two kinds of work, however, that Mr. Miller does not want his mares with colts employed at, and they are harrowing and plowing. It is too hard on the mare and the colt wears itself out running in the heavy plowed ground, so that a large amount of food that should go to build up the youngster is wasted. Also, on account of the steady grind of the work, the mare is liable to become very warm and if the colt sucks her in this condition it is very liable to cause bowel trouble. Sometimes when it is absolutely necessary to use a mare for such work, it is best to put the colt in a corral where there are other mares and colts. In this way the colt will not miss its mother so much as it will be able to suckle some of the other mares. Where the work continues any length of time, a fresh mare should be employed each day and in the middle of the forenoon and about 3 in the afternoon, the mare should be driven to the colt and the little fellow given his dinner. This will tend to keep both mare and colt quiet.

Whenever a mare with a colt is not working she is turned immediately on pasture. The little fellow learns to nibble the grass and the mare's milk flow is increased. By the time a colt is a month old, especially if the mare is not giving as much milk as is necessary, it should be taught to eat bran or crushed oats. By having a box of this feed so arranged that the larger horses cannot get at it, the little fellows will soon learn to lick it up.

"Never wean too soon," says Miller, "for if you do the colts are going to be stunted." The time for weaning depends a great deal on the condition of the colt. Some can be weened at five months, while others should wait until the seventh month. Foals that have been with their mothers working, as a rule, do not know how to eat as well as those colts who have been in pastures with their mothers most of the time. Consequently, the colts that have been running in pasture can be weaned abruptly without any disastrous results, for they will immediately go to eating grass and hay without any shock to their stomachs. On the other hand, the colt that has been following its mother at work should be weaned gradually and at all times have plenty of food before them. An excellent rations for these colts is crushed oats mixed with bran and alfalfa hay. This should be fed them three times a day and, in the meantime, they should have all the green grass that they can pick up. Also, there should be salt handy for them.

Mr. Miller aims to put his weanlings in a pasture where there are several old mares with young colts. It keeps the colts more contented and prevents them running their legs off. Nor does the field want to be too large, as the colts will run around it and lose sight of the old mares. As soon as they have forgotten their mothers the colts are halter broken and taught to lead.

"After the colts have commenced to run the pastures keep a close watch over them," says Mr. Miller. He wants his men to see that their feet are growing properly, that no lice come on them, and in November of every year to take those yearlings that are not doing very well and put them in a corral by themselves and give them extra feed so that they will make their proper growth.

Contrary to the general belief, it does not hurt a horse to give him water in moderate quantities, even when he is very hot, providing the water is not very cold.

Never work a team of colts together until they are thoroughly broken, as they will worry each other.

Keep the horses well cleaned, but remember that you can be cruel with the curry comb.

TREES All Varieties

We Grow Everything That Grows

Apples	Peaches
Pears	Plums
Apricots	Oranges
Lemons	Almonds
Walnuts	Olives
Grapevines	Berries
Palms	Cypress

Evergreen Shrubs, Roses, etc.

1913-1914 Illustrated Price Catalog—Free.

Geo. C. Roeding, Pres. and Mgr.

FANCHER CREEK NURSERIES INC.
Paid up Capital, $200,000.
Box 41 Fresno, California

One Sack of Our Fertilizer Equivalent to One Ton of Manure

Make Your Soil More Productive

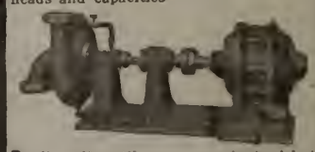
Use the modern method of handling manure. Use GYPSUM in your stable—eliminates flies and retains the essential elements, usually lost in the form of gases. It counteracts black alkali and turns it into plant food. Corrects acidity in soil. Collects moisture from the air. Increases every crop—excellent for alfalfa. We also sell Blood Meal, Ground Phosphate Rock, etc. WRITE FOR QUOTATIONS.

STANDARD FERTILIZER COMPANY, Inc.
323 North Los Angeles Street,
Los Angeles, Cal.

CROP INSURANCE

PUMPS **MOTORS**

Miller Horizontal Automatically Water Balanced Enclosed Runner Ring Oiling Direct Connected Pumps make ideal pumping units. Built and guaranteed for all heads and capacities



Don't wait until your crop is dead but write us **NOW** and ask for catalog and information blank. We are experts and our experience is at your command.

NORMAN B. MILLER CO.
SAN FRANCISCO, CAL.
701 HOOKER & LENT BLDG.

SEEDS

Six packages of our dependable northern grown seeds sent absolutely **Free** to those who send for our handsomely illustrated and descriptive seed catalogue. All we ask is that you

Send 10 Cents

to cover cost of packing and mailing. Highest quality seeds; prices reasonable; the collection follows:

RADISH, Scarlet Beauty	Value	10 cts.
TURNIP, Purple Top White	"	5 cts.
ONION, Large Red	"	10 cts.
SPINACH, Broad Leaf	"	10 cts.
LETTUCE, Dew Drop	"	10 cts.
MIGNONETTE, Colonial Mixture	"	10 cts.

Write today and receive one of the 10,000 fifty-five cent collections, which we are giving away to get our catalogues into new territory.

THE CHERRY SEED CO.
128 Vine Street Rockford, Ill.

Orchards Profit by Cover Crops

By Dr. Charles B. Lipman

IT is found that not only has the gospel of green manuring, strenuously and unceasingly as it has been preached, failed to be adopted by all as yet, but there are certain alarming evidences of backsliding on the part of a few who have tried it because of the slight agitation in favor of new systems of adding organic matter to soils which has been of late fomented.

The purpose of green manuring is, of course, to add humus and other forms of organic matter to the soil. The value of humus and organic matter should now be well known to all horticulturists, but they may be briefly reviewed as follows:

It flocculates or shrinks the clay in heavy soils, making a crumb structure. Therefore it prevents baking and running together of soils. This increased friability bring with it a number of advantages such as greater ease of tillage, better drainage, greater heat absorption, therefore more rapid and thorough warming up of the soil, a greater degree of weathering of the soil minerals, therefore, greater availability of plant food, more beneficial conditions for the activity of useful soil bacteria which must have air, warmth and soluble salts for development as well as the organic matter itself.

Just as humus gathers the clay particles into little crumbs and thus makes a more friable soil of a heavy clay, so it brings about the opposite effect on sandy soils. It binds or cements the sand particles, making it more difficult for air to pass through too readily. Likewise the passage of water downward is made more difficult. In other words, the retentiveness of the sandy soil for water is much increased. Also nitrogen is thus added to a class of soils usually poor in that element, bacterial activity is very much enhanced, minerals of the soil are made more available, and, in general, the sandy soil becomes a more congenial medium for plant growth and for the production of paying crops.

It contains the largest portion of the nitrogen which becomes available to plants.

It is the home and the laboratory and the source of energy for micro-organisms of the soil upon whose activities the feeding of the plants and, therefore, soil fertility, depends to so large a degree.

It fixes ammonia, phosphoric acid and potash so that they cannot be leached out of the soil except with the greatest difficulty. This is brought about, it is believed, through the power of certain jelly-like compounds in the humus, which, like similar onces in the clay, have the power of holding on to certain chemicals very tenaciously.

It helps markedly in the solution of soil minerals carrying the important plant foods, like the phosphates and the potash and lime compounds. This is brought about through the formation of organic acids in the decay of the humus and by the carbonic acid gas, which is the end product of the oxidation of the carbon contained in the humus.

The other organic matter incorporated in the soil by green manuring will, by its bulky nature, serve to loosen up and ventilate heavy soils. It may, however, do harm to very light sandy soils which are already too well ventilated.

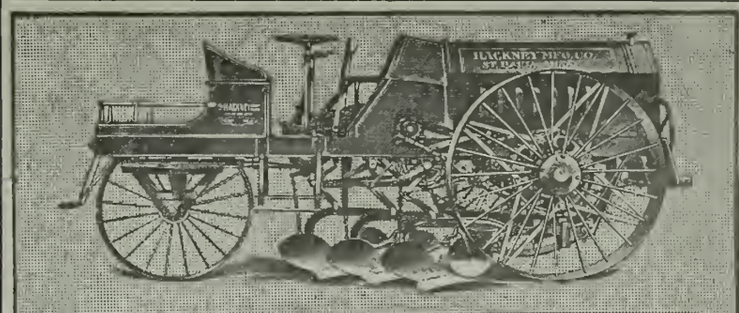
The organic matter is an ultimate or potential source of considerable nitrogen, only about half of the soil nitrogen being contained in that portion of the soil organic matter which we call humus. It is also a source of energy for many soil micro-organisms —probably in part for those which gather nitrogen from the air and add it to the soil. Organic matter is largely a potential, though to some extent an actual, source of acid production in much the same way as the humus, and, therefore, in some degree is of value as a solvent of important mineral plant foods, and it is at the same time a potential source of humus.

Humus in different soils differs widely in chemical composition. The other portions of soil organic matter not classed with humus vary considerably in composition, the freshly incorporated materials having much the same composition as plants from which they are derived, and the others more or less clearly resembling humus in chemical nature depending on the degree of decomposition to which they have been subjected.

By green manuring is meant the plowing under of a crop in its green living condition to allow it to decay in the soil and add to the various forms of organic matter there. There are also different systems of green manuring arranged to suit the local and individual needs of orchardists and other agriculturists. Principally, however, they may be classified as those of legumes, non-legumes and mixed legumes and non-legume systems. In the legume system we employ as the cover crop, which is to be used as a green manure crop, one that belongs to the legume family, which comprises a group of plants endowed with the power of harboring in small nodules on their roots certain forms of bacteria possessed of the power of gathering nitrogen from the air and yielding it to the plant and to the surrounding soil. This unusual power on the part of the legumes renders them of unusual value as cover and green manure crops, for they can thus be used not only as suppliers of humus but also as nitrogenous fertilizers furnishing a source of nitrogen which, practically speaking, costs nothing.

In the system of non-legume green manuring usually the grains like barley, wheat, rye and oats are used, but not infrequently buckwheat, and the common weedmallow and its associates may be employed. These plants do not possess any associative partnership with bacteria so far as is known, leastwise with nitrogen fixing bacteria, and so the fertilizing advantages accruing from the use of legumes as cover crops and green manures are wanting in the case of the non-legumes. In other words, legumes add nitrogen plus the organic matter, thus making the soil not only better but richer, while the non-legumes improve the soil, but do not make it any richer because their growth on it does not result in the addition of nitrogen to the soil.

The legume green manure system is recommended where a good winter growth can be obtained. Vetch, Canada field peas, bur clover, fenugreek, Tangier peas will all yield satisfactory results, some doing better in Northern and Central California, and others in Southern California. They should be chosen accordingly. If it should be impossible to start a legume on your land for a season or two, or ever, use barley, oats or rye and plow that under. But if a growth of legumes can be obtained at all, it is advisable to use a combination of legumes and non-legumes-vetch and wheat or rye, peas and oats, bur clover and barley are practicable combinations. Plow it under as late in the spring as possible consistent with maintaining good water conditions in the soil. Be sure to plow it under deeply. Disk it thoroughly to cut up the green stuff and compact the soil to prevent loss of moisture by evaporation.



The Tractor that is replacing Horses on small farms and big Tractors on big farms

Here's the Perfect "One Man Outfit"

DEVELOPS 20 TO 25 HORSEPOWER AT THE DRAW BAR

Read the heading and the statement to the left again. Then think well on what follows. This tractor will plow, seed, disc and harrow quicker and at a lower cost than horses, and it does not pack the ground as much. It plows close to fences and after it does the work on the farm it can be used for road-grading, hauling or belt work, etc. It is taking the place of the big tractor on big farms because it is lighter and consumes less power. As traction power is increased or diminished so is the fuel supply. We want to send you literature which tells and explains by text and illustrations why the

Hackney Auto-Plow

is the superior of both horses and big tractors. This literature is our "silent salesman." It tells of the experience others have had with this tractor and describes every part in detail. We think that when you read of what this tractor has done and can do—of its many time and money saving features—you will be interested enough to arrange for a demonstration. This machine is a 1914 model and has our new motor. You can burn distillate, coal oil or gasoline. The man who invented the HACKNEY AUTO-PLOW HAS BEEN A PRACTICAL FARMER ALL HIS LIFE. Write for literature NOW, before you forget.

SOLD ON APPROVAL

A. L. LAW, California State Sales Solicitor
1401 K STREET SACRAMENTO, CAL.
Manufactured by
HACKNEY MFG. CO.
ST. PAUL, MINN.

THE HACKNEY AUTO-PLOW THE ONE MAN OUTFIT LEADS

Ignorance Means Loss

There are certain thieves which are stealing your profits.

You can't tell just exactly how much you are losing because it is done so quietly and carefully that you, perhaps, cannot perceive a difference.

One season's production of your orchard will tell you just exactly what you have lost in former years.

Various insects and fungus diseases are thieves in every sense of the word.

And these should have special attention to kill them.

WE MANUFACTURE "ORCHARD BRAND" SPRAY MATERIALS.

Special mixtures for specific insect and fungous troubles. Arsenate of Lead, standard, paste and powder for killing codling moth and chewing insects. Arsenate of Lead, Tri-Plumbic, paste, specially designed for use in humid, foggy sections of the West. Arsenate of Zinc, powder for killing chewing insects on truck crops. Lime Sulphur Solution, for use on fruit trees during dormant period. Atomic Sulphur, fungicide, for use on Peach trees to control brown rot; on Apple trees to control mildew, leaf-spots, cedar rust and scab—also for red spiders and mites. Bordeaux mixture, paste, fungicide for general use on plants; for celery blight, peach blight, etc. Soluble Oil and Oil Emulsion, for dormant treatment of fruit trees and for pear thrips, aphis, etc.

Mr. S. W. Foster, the former entomologist of the United States Department of Agriculture is glad to give you free information about these problems. He will be glad to answer any question that you would like to ask.

You need special directions because of the different climate and different soil conditions. There is a different problem for every orchardist.

Special directions are given whenever they are asked for.

Send for special information.

Don't put this off, because it is necessary to have this at once if you wish to get the most out of your orchard next spring.

You will be surprised at the knowledge you will get and the information which will prove of benefit to you.

This information means a question of dollars and cents to you. Send to-day.

GENERAL CHEMICAL COMPANY OF CAL.
Royal Insurance Building San Francisco

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

ORCHARD and FARM

ESTABLISHED 1888

IRRIGATION

VOL. 26 JANUARY, 1914. NO. 1

Published Monthly at Hearst Building, San Francisco, Cal., by the Country Life Publishing Company.

SUBSCRIPTION CONDITIONS

Subscriptions are discontinued on expiration of time for which subscription is paid unless renewed beforehand. Subscribers receiving a subscription blank with this magazine are thereby notified that their subscription has expired, and they are invited to return it promptly with a remittance, if it is desired not to miss an issue. No other notice is given. If you receive a sample copy with a subscription blank inclsoed, it is an invitation for you to become a subscriber.

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

CONTRIBUTORS TO ORCHARD AND FARM.

GEORGE W. SHAW, Agronomist----------Berkeley, Cal.
MEYER E. JAFFA, Poultry Expert, University of California------Berkeley, Cal.
H. E. VAN NORMAN, Vice-Dean and Director, University Farm School--Davis, Cal.
DR. A. J. COOK, State Commissioner of Horticulture----------Sacramento, Cal.
E. O. ESSIG, Secretary State Commission of Horticulture------Sacramento, Cal.
JOHN VALLANCE, Horticulturist----------San Francisco, Cal.
A. B. CORDLEY, Dean, College of Agriculture----------Corvallis, Ore.
ARTHUR G. B. BOUQUET, Oregon Agricultural College----------Corvallis, Ore.
C. I. LEWIS, Horticulturist, Oregon Agricultural College---------Corvallis, Ore.
R. R. GRAVES, Dairy Expert, Oregon Agricultural College--------Corvallis, Ore.
E. E. SELDEN, Dairyman----------Selma, Cal.
P. C. CHADWICK, Apiarist----------Redlands, Cal.
O. E. BREMNER, Horticultural Expert----------Santa Rosa, Cal.

Pay Attention to Small Things and Eliminate Waste

PROMPT and proper attention to little things is important to good farm management. It is essential in this age of competition for a farmer to progress with the advancement of agricultural methods and one of the chief factors in making that progress is to carefully examine into the little sources of loss and eliminate them whenever possible. It is very often in this way that a loss in the year's operations is turned into a profit. Many vast commercial enterprises are successful only because of the keeness and shrewdness their managers exhibit in utilizing or disposing of waste and by-products.

Farmers have come to realize, as never before, that the last dollar on the returns is the dollar which is all profit. A few dollars, more or less, do not look large when compared with the gross value of a commodity, but they may increase or decrease the net gain by a hundred or by several hundred per cent. A farmer should get that extra dollar or two and get it by stopping the leaks.

One of the most glaring of the leaks on the average farm is found in the lack of care given the barn-yard fertilizer. Many dollars are allowed to go to waste on most farms for want of proper handling and use of this by-product. There are big leaks on many farms in the management of the live stock. One of the greatest of these is in the raising of scrub stock. It takes as much to raise a scrub animal as it does to raise a pure bred, and its value is less—often less than the cost of raising. There are other leaks in the current feeding practices. A great deal of scientific work of value has been done of recent years in the compounding and balancing of rations, and much attention should be paid to it in feeding animals. Many people, in a desire to save, fail to feed enough to get the best results from live stock. It is the last pound of feed eaten that makes the profit. Keep pure bred or high grade stock and feed liberally.

Thousands of dollars are lost annually by the farmers in the lack of care which is commonly given to machinery. Many good and useful implements are allowed to "rust out" in the fields or in piles in the shed. More machinery is neglected and permitted to rust into uselessness than is worn out by use. Do not neglect making repairs to a machine until the time is ready for its use. Do it beforehand when time is less precious. Most leaks are not so obvious as those just mentioned. Generally they are pretty well hidden and a person must be on the alert to find them and some systematic method of looking for them is essential. Some farmers succeed in this by keeping a set of books and each month sum up the farm accounts. The commencement of the new year is a good time to start a system of accounts on your farm. Find the leaks and stop them.

The advertising that a man does not want he can always get by making someone mad.

THIS editorial is written in response to the request of a reader that asks us to point out the harm parents do by giving conflicting orders to children.

Many thoughtless fathers and mothers bewilder their children and hinder their development in the way complained of.

In the system of laws which govern grown men the first essential is UNITY of law. If laws should conflict, no man would be expected to live or to develop properly under them.

The will and the intsructions of the parents are the LAWS which govern children.

The child is unfortunate whose parents are whimsical. Still more unfortunate is the child whose father and mother disagree on important points—one saying "You shall do that," another "You shall not do that" —one ordering a certain thing, the other forbidding it.

The idea of education is first of all to develop what is IN the child, bringing out what is good in him, with as little oppression and coercion as possible from without. The child should be controlled mainly by making him feel personally the uncomfortable results of a harmful action.

Nature corrects us grown children solely by making us suffer the consequences of our own deeds. Children should be corrected in the same way—not arbitrarily, not by threats, but through their reason, their sense of justice and their respect for inevitable consequences.

Above all, the child should be made thoroughly to respect laws and rules. There should be no such thing as conflict between parents. A single order from a father contradicted by a mother is enough to destroy all respect for parental authority.

We urge upon parents to be CONSISTENT by discussing and settling differences of opinion among themselves, and never destroying the child's respect for authority by conflicting orders.

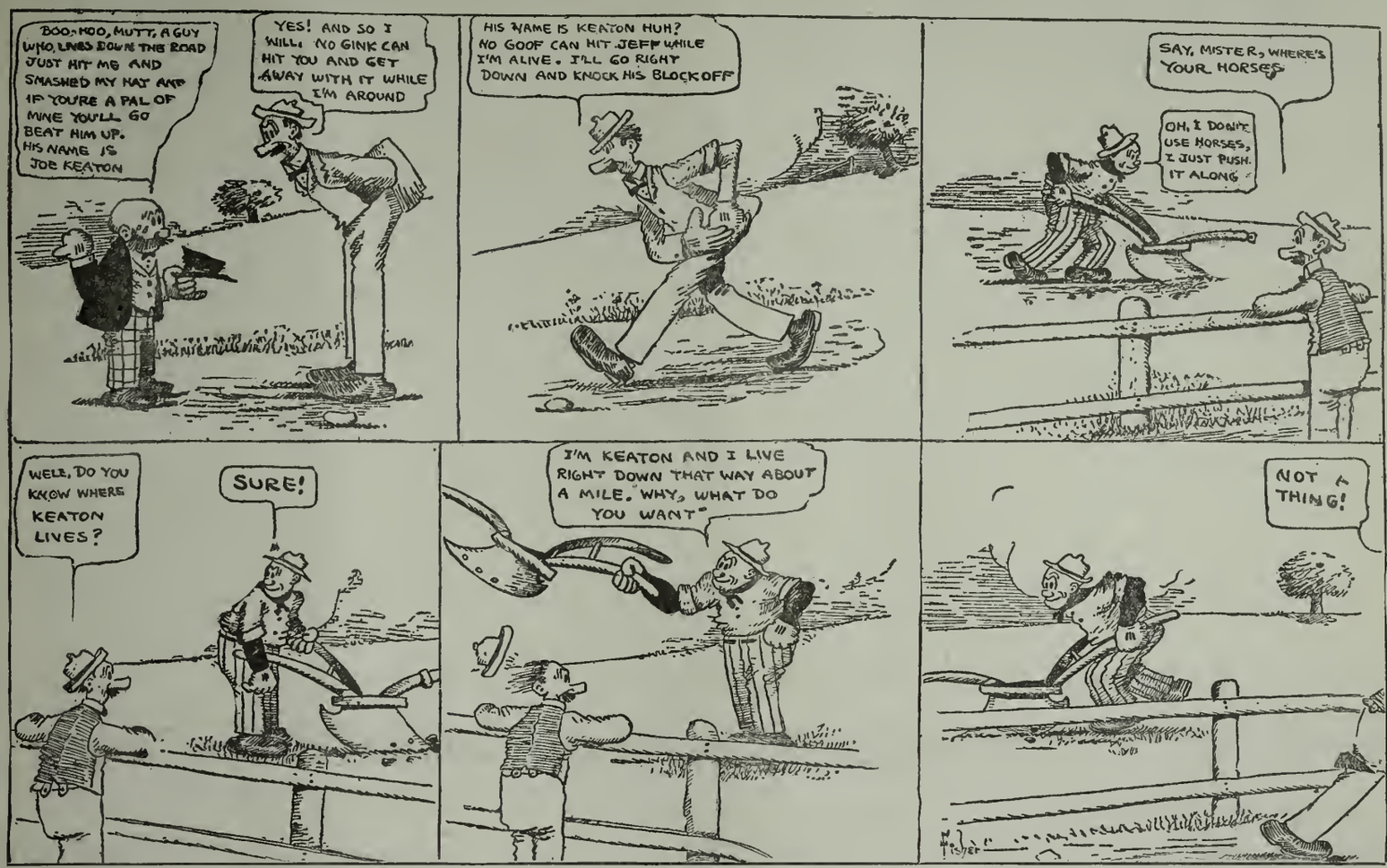
The tall cemetery shaft is proof that one has left some friends behind, anyhow.

THE farmer must keep everlastingly at work, but system and modern methods will make his burdens lighter. No sooner is the crop off the field than he must begin to put the field in order for the next crop. He is continually on the firing line in the battle against the scores of different enemies that are after his fruit. His enemies are manifold. The winter rains wash off the uncovered fields. More attention must be given to cover-crops that protect his fields from washing, stop the making of gullies and contribute something besides to the annual revenue of the farm. Soil fertility is dependent upon natural conditions and upon soil management. He must restore the fertility through the use of leguminous plants, which have the power of supplying nitrogen to the soil, and which when plowed under add humus. The farmer must consider the soil as his bank of deposit. Each year's cultivation ought to leave it richer than before; in better condition in all ways. By proper rotation, proper care for the preservation of the soil, protection from winter washings and waste, the farm should yield better crops every year. Soil conservation is only one element in successful farming. The farmer must select his seed with the utmost care. Work is not wasted in the attention given to securing the best seed and in the testing of it. It is with grain crops as with livestock: know something of the history of the family. Select seed with as much care as selecting the sire of a horse.

It is one thing to float high in your own estimation and another to land a few plums.

THE average farmer probably does more guessing than any other person. Method and system were omitted from his training. It is much easier to guess at a thing than it is to test it. Besides, the element of uncertainty adds zest to the practice. One of the favorite guesses of the average farmer is the milk yield of his cows and the quantity of butter fat contained therein. Of course, the progressive farmer uses a Babcock tester and weeds out his boarder cows. He eliminates every element of uncertainty that is possible and he generally succeeds in his business. It is a noteworthy fact that very few men "guess" their way to success on the farm or in the city. The world's good things go to the men who know. Knowledge always brings larger returns than manual labor. The man who says "I think so" is the one who is ordered, while the man who knows it is so is the one who does the ordering. Efficiency on the farm is the foundation of success in agriculture. A great many farmers will say "I guess that is so" and let it go at that.

Mutt Changed His Mind : : : By 'Bud' Fisher



Power and Love

By Elbert Hubbard

ANY person, in any walk of life, who puts jealousy, hate and fear out of his life will be distinguished. All good things shall be his. They will flow to him.

Power gravitates to the man who can use it; and love is the highest form of power that exists.

If ever a man shall live who has infinite power he will be found to be one who has infinite love.

The way to free yourself from discord is not to take a grip on yourself and strive to be kind—not that. Just don't think much about it, but lose yourself in your work. If your intent is right your action will be also.

Hell and heaven are not localities—they are states of mind.

Once we thought work a curse; then it came to us that it was a necessary evil; and yesterday the truth dawned upon us that it is a precious privilege. There is more joy in useful effort than in the painstaking avoidance of it.

Creeping into the lives of men everywhere is the thought that co-operation is better than competition. We need each other, and by giving much will receive much.

That old maxim, "Cast thy bread upon the waters," is founded on a stern psychologic law.

Everywhere schools and colleges are doing things; not merely talking about them. The education de luxe—the education for show—will soon be consigned to limbus. Already we say: "The man is the best educated who is the most useful." And the true test of education will lie in its possessor's ability to serve.

Do not go out of your way to do good, but do good whenever it comes your way. Men who make a business of doing good to others are apt to hate others engaged in the same occupation. Sacrifice and self-abnegation are not needed.

Simply be filled with the thought of good, and it will radiate. You do not have to bother about it any more than you need to trouble about your digestion.

Do not be disturbed about saving your soul. It will certainly be saved if you make it worth saving.

Do your work. Think the good. And the evil, which is a negative condition, shall be swallowed up by the good.

"When we were in Boston," said Mrs. Twickembury, "we visited the Public Garden and saw that splendid pedestrian statue of Washington on horseback."

"What Happened to Mary."

(In One Reel.)

MARY had a dozen eggs,
She found them in a nest;
She sold them to the grocer man
And the coin she did invest.

And with the change that she had left
This maiden fair and bright
Just bought herself a touring car
And vanished out of sight.

Robby—I think I like you better than any of the other fellows that come to see sister.

Percy—I'm pleased to hear it, Robby. Why do you like me the best?

Robby—Because Sis always lets me stay around and hear what you say.

"The difference between the white man when he does wrong, and the colored man," said the old darky, "is this—the white man, when he begins to do wrong, he quits praying—but the darky prays more."

If there is any of the hog in a man the bristles will soon begin to show when he travels.

Undertake to prove that there is no hell and every mean man will throw up his hat.

The man who isn't behind the plow as much as he ought to be is sure to fall behind.

The man who talks much about himself will always have a tired audience.

Nothing pays a poorer interest on the investment than wearing a long face.

The Uplifting Business

THE report of the Country Life Commission appointed by President Roosevelt stated that after circularizing, interviewing, uplifting and otherwise harassing some 125,000 farmers all over the United States they found it universally true that there was a consciousness of a sort of agricultural unrest prevalent in the land.

While not in itself alarming or at all original this report caused much comment among those who had failed to translate what Marcus Aurelius said along the lines some hundreds of years ago.

If the farmer had not kept enough brains at home to beat the tax collector there would not have been any crops to discuss. If he had not shown political genius enough to hold on to a forlorn hope and make it grow into a blossomy twig the rural free delivery of mail and the parcel post would never have materialized to bother the express companies. If occasionally he had not been able to "put one over" on the railroads, transportation would cost more than crops are worth. Then the middleman would close up shop and farm produce would go directly into the hands of the benevolent ultimate consumer who yearns to uplift the price of urban real estate and purchase fresh butter and eggs from the downtrodden farmer at twenty per cent less than the market price with no allowance for packing and shipping expenses. Yea, verily, the country home needs investigating, but the next crop of uplifters had needs better be a little wary about strolling up to the farm house on the day when the Ladies' Aid Society is being entertained, assuming the haughty bearing of a lightning rod agent or a vendor of fruit trees, inviting himself to dinner and after partaking of fried chicken, hot biscuits, cake, sliced peaches and cream, going forth and writing a bulletin for Uncle Samuel to circulate telling that the extravagance and social inclinations of the farmer's wife are driving the country to the damnation bow-wows and raising the price of potatoes. Never again can that trick be played and upon the least suspicion that the enemy is upon them the farmer will hereafter bang the door, point to the woodpile and advise the uplifter to saw wood for his bacon and beans or bulletinize no more. The uplift business in the future will be handled by the man with the pitchfork, and long may the farm continue to prosper.

Our Treeless School Yards

—By John Vallance—

HAVE you, when traveling over our beautiful State, noticed the yards around the schools? Have you noticed that so many of them are treeless—not a tree or plant to be seen? You no doubt have perceived this, but did you give any further thought to this subject? I am afraid the most of us have gone no further.

Well, let us now take this matter up and consider what these dear wee boys and girls must suffer. Yes suffer! They have to sit in those sweat-boxes for five hours a day trying to learn their lessons. I think we have been overlooking a duty that we should have attended to long ago.

Picture in your mind one of those unsightly buildings standing in the hot valleys, the sun pouring into the windows at all times of the day—not a particle of shade. Do you think those children can devote their thoughts to their studies under such circumstances? Do you think we are going to get the best out of them? Do you think it is right to subject them to such a condition of affairs through our negligence? Do you think the children will have happy recollections of their school days under such conditions?

Picture the opposite of this scene. Trees, plants and flowers planted around our schoolhouses. The pepper tree, a lovely evergreen that delights in our climate; the Acacia, brought from its Australian home; our own beautiful Redwood, the California big tree; cypress, pine, Casuarina and eucalyptus, natives of the Antipodes. All these evergreen trees will, if planted soon, transfer our treeless school yards into veritable shade spots. Or you could plant the catalpa, black walnut, the elm, the locust, the maple, the umprella and the hawthorn. All are good deciduous shade trees and will soon afford what so many school yards so sadly lack, shade.

Besides these, the children themselves can plant annuals, such as Mignonette, Verbenas, Asters, Pansies, Daisies, Cosmos, Coreopsis, Foxgloves, Larkspur, Marigolds, Nasturtium, Gaillardia and many others.

Contrast this picture against the other, with the little ones sitting at their desks looking out upon these beautiful flowers and trees, getting the odor from the Mignonette; they can hear the birds singing and twittering in the trees. Such scenes will make them happy, will sweeten their young lives, will in after years return to them and help them through life.

I remember when I went to school, near the school house there was a plantation of large trees. At recess I would wander therein and sit at the foot of some lofty forest giant; my thoughts would wander to tropical forests of the Amazon, of the Platte, and my desire would be to visit those scenes, as I did. I can never forget the effect those trees had on me, why it is a green spot in my memory even to this day.

Therefore, having so great an opportunity, let us not neglect it. There is at the present time, I am happy to say, an awakening along these lines, and I see many school children planting and sowing and tending to the young plants.

The Harrow and Its Uses

By E. A. Marris

AFTER your ground is plowed, what next?

Just here is a point many farmers disagree upon, as far as grain land is concerned.

If you sow before harrowing, the harrow pulls clods of earth on top of some of the seeds and the plant fails to come up. You also fail to level off the ridges and fill in the dead furrows.

If you harrow before you sow you secure a finer seed bed and you have a more level field. Then by harrowing again after sowing you fail to cover all of the seed and your horses trample the ground just twice as much.

The whole problem depends almost entirely on the condition the land is left in by the plow.

If you have used good judgment in the selection of a plow, used this implement properly when the ground is in the proper degree of moisture, the field will be level and smooth enough to sow your seed at once.

The best harrow is a steel one with teeth which can be changed from a position slanting at a slight angle forward to a wide angle backwards. The advantages of being able to shift the angle of the teeth is to allow the harrow to dig into the ground if it is desirable or to just skim over it. In weedy ground the harrow with the teeth set at a slight angle backward will do good work and at the same time allow the weeds to work clear, preventing the harrow clogging. With the teeth laid almost flat backwards you can break up the crust which often forms after a rain and which will bake hard and prevent the seed from coming through. If set a little straighter the harrow will be very useful for killing young weed growth. With the teeth laid flat and some weight put on each section the harrow makes a fine leveler and clod smasher.

To do the best work the team must walk fast. Do not get too large a harrow and overload your horses. A harrow eight feet wide is enough for the average team. Harrowing is harder on horses than plowing. Do not try to do too much, but what you do do well.

There is a vast difference in the way harrows hold to the ground. Some makes will persist in just scratching the surface, while others seem to try to get closer to the earth all the time. Make a study of the different harrows in use and get the one that suits your conditions best.

Harrow the way you plowed. Follow the plow. Never harrow against the plow furrow. It pulls up clods and weeds and often leaves the ground worse than if you had not used the harrow at all. In cross harrowing grain turn sharply at the end of the field and go back, lapping one tooth only on the ground just harrowed. In this way you trample less ground. When harrowing in an orchard turn so as to take in two rows of trees. By making a short turn you are liable to bark some of the trees. A specially made orchard harrow is best for this work, and if you have an orchard and open fields an orchard harrow will do all the work of its kind required on your farm.

Always remember one thing—keep the harrow teeth sharp.

Disposal for Manure

The most important part of the stable sanitation from the other fellow's standpoint is the disposal of manure.

The liquid manure should be absorbed by the bedding and the bedding changed every day. The solid manure should be cleaned up morning and evening and thrown in a fly-proof box or vault. If possible, have it hauled away daily.

Universal Orchard Sprays

UNIVERSAL ORCHARD SPRAY

More mistakes are made in buying orchard sprays than in almost any other line of agricultural work. **Always** consult a specialist **who knows what to recommend** for each particular insect or fungus. Our entomologist, PAUL R. JONES, is at your service **free.** His experience with the United States Dept. of Agriculture for many years places him in a position to give you **absolutely correct advice.** We handle the most complete line of Insecticides in the U. S. Among the products we manufacture and distribute are

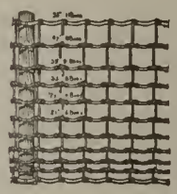
YEL-ROS — **DISTILLATE OIL EMULSION**
23° CRUDE OIL — **CRUDE OIL EMULSION**
CRUDE OIL EMULSIFIER — **LIME SULPHUR SOLUTION**

Kerosene Emulsion; Miscible Oil No. 1; Miscible Oil No. 2; Miscible Oil No 3; Sheep Dip; Liquid Whale Oil Soap; Whale Oil Soap (hard); Cresol Soap; 32°-34° Distillate Oil; Black Leaf 40. Arsenate of Lead; Bordeaux Mixture; Atomic Sulpbur.

Booklets Sent Explaining Use of Each Product.

Send for Our Spraying Calendar—Free

BALFOUR, GUTHRIE & CO. (Insecticide Dept.)
350 CALIFORNIA ST., SAN FRANCISCO
Park and Oak Sts., Portland, Ore. — **826 Higgins Bldg., Los Angeles, Cal.**



KOKOMO STEEL WIRE FENCE

Either square or diamond mesh, FOR POULTRY, HOG OR STOCK USE. Many styles to select from. Satisfaction guaranteed. Send for Catalogue with net factory prices.

California Anchor Fence Co.

Market and Aurora Sts. — Stockton, Cal.

Ask Your Dealer for

EL DORADO COCOANUT OIL CAKE

for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market to-day. If your dealer doesn't carry it, address

EL DORADO OIL WORKS

149 CALIFORNIA STREET — SAN FRANCISCO

Cutaway (CLARK) Disk Harrows

Work Up The Soil Finer Than Other Harrows And Are Lighter Draft

For more than a quarter century we have been making CUTAWAY (CLARK) disk harrows for men who want to till their land more thoroughly, more intensively, than is generally practised. Today CUTAWAY (CLARK) implements are the standard of real worth. They are constructed with utter disregard of the designs followed by makers of other disk harrows. They are built to pulverize the soil finer than other harrows will do, and to do it without increasing the draft. We make

OVER 100 STYLES AND SIZES

of CUTAWAY (CLARK) disk harrows and plows. We have one for every farmer whether he has but one small horse or a large tractor engine with which to pull it. Tell us what your needs are and we will tell you about the tool best adapted for them. If you believe in more intensive tillage of the soil, then you believe in CUTAWAY (CLARK) implements. Ask the CUTAWAY dealer in your town to show you a CUTAWAY (CLARK) disk harrow or plow. If we have no dealer there, write to us for catalog. We ship direct where we are not represented by an agent. Don't accept a substitute.

Write today for free book "The Soil and Intensive Tillage"

Our booklet, "*The Soil and Intensive Tillage,*" illustrates CUTAWAY (CLARK) tools and contains ten pages of valuable information on the soil—its chemical and physical properties—the feeding of plants, and intensive tillage. There is also an article by Professor G. B. Upton of Cornell University on the CUTAWAY (CLARK) Forged-edge Disk.

THE CUTAWAY HARROW CO., 996 Main St., HIGGANUM, CONN.

Maker of the original CLARK disk harrows and plows

High Schools in the Country

By Dennis H. Stovall

IN California and other Western States the "Little Red School House," however dear it may have been, is becoming a thing of memory. The modern country school, like the modern country home, has none of the discomforts and inconveniences of the old The erection of better school buildings, with the best equipment that can be had, with bright, cheerful rooms, comfortable desks and up-to-date heating plants, has led to the improvement of the rural schools in every particular.

Instead of one big, barren room there are two to four rooms in the modern rural schools of the West. Grading is as carefully followed as in the city, and the whole work is carefully systematized. This has made possible the establishment of high schools in the country, which is as it should be.

The old method of "moving to town" so the sons and daughters could attend high school often led to disaster in that it ultimately meant the abandonment of the farm.

In one mountain section, a number of miles from a railroad and an even greater distance from a city or town, a splendid high school is maintained. This school was established by uniting three country schools of neighboring districts. The ranchers and farmers concluded that it was better to operate one big school than three small ones; that by combining them better teachers could be employed, a bigger building erected and many more conveniences afforded. The truth of this conclusion is being proved, for this school has now been in successful operation for three years. To get the children to school three "kid wagons," as the pupils call them, cover the district routes every morning and afternoon. Most of the boys and girls are picked up at their gates, having no farther to walk than if they lived in town. The wagons return them again in the afternoon. The wagons make a regular schedule, all through the winter, each rig being covered and provided with comfortable seats.

To operate a high school in the country requires pupils, and only by uniting several districts can this be accomplished in sparsely settled communities. In sections where the plan has been given a fair trial good results were the reward. In the first place it is possible under the combination method to erect a bigger, better and more completely equipped building. It is possible, also, to have a far better teaching force. Instead of one teacher, struggling under the old-time method of conducting six or eight small classes, there are three or four teachers, each with no more than two or three grades. The superintendent of the school is teacher of the high school classes, and precisely the same methods can be followed as that employed in the city. Likewise, the same results may be had by the pupils.

Over and above all this is the better spirit of enthusiasm that prevails. This falls alike on teacher, parents and pupils. All have a just pride in the "bigger school." There is a genuine satisfaction in knowing that the thing possessed is just as good as anyone has. The boys and girls are far better satisfied. It removes their desire to go to town to school. All that now remains for them is a college education, and even some features of this, along practical training lines are followed in the country high schools.

Particularly is this true in teaching advanced methods of agriculture. And here again is made manifest the benefit of a bigger organization, for by this plan the directors of the various state experiment stations and of the agricultural departments can much better give their assistance.

Taken all in all, the passing of the "Little Red School House" will occasion no regret in the progressive West. The coming of the country high school and of the union school, with advanced methods, solves a problem that for many years was the direct cause of driving thousands of energetic boys and girls from the country to the city, this being nothing else than a desire to be educated—a desire to get something that they couldn't get at home.

Rules for Workhorses

Start at a walk, and let your horse work very easily for the first half hour.

A heavy draft horse should never be driven faster than a walk, with or without a load.

Look to your harness. Avoid these faults especially: Bridle too long or too short. Blinders pressing on the eye or flapping. (An open bridle is best for most horses.) Throat-latch too tight. Collar too tight or too loose, or dirty on the inside. Shaft-girth too loose. Traces too long. Breeching too low down or too loose. Inside reins too long, in the case of pairs.

Do not let your horse drive himself; but handle the reins gently. Never jerk the reins; to do that is the sure mark of a bad driver.

Try to work with as little backing as possible. Backing a heavy load is apt to strain the hind legs.

Take the horse out of the shafts as much as possible; and if you drive a pair or four, unfasten the outside traces while the horses are standing; they will rest better that way.

Teach your horses to go into the collar gradually. When a load is to be started, speak to the horses and take a firm hold of the reins so that they will arch their necks, keep their legs under them, and step on their toes. A loose rein means sprawling and slipping, often with one horse ahead of the other.

Water your horse as often as possible. Water in moderate quantities will not hurt him, so long as he keeps moving.

Blanket your horse carefully when he stands, especially if he is at all hot. Repeated slight chills stiffen and age a horse before his time.

Bring your horse in cool and breathing easily. If he comes in hot, he will sweat in the stable, and the sudden stoppage of hard work is bad for his feet.

In hot weather or in drawing heavy loads, watch your horse's breathing. If he breathes hard, or short and quick, it is time to stop.

Remember that the horse is the most nervous of all animals, and that little things annoy and irritate him. Remember that he will be contented or miserable accordingly as you treat him.

Breeding Draft Horses

The breeding of heavy draft horses is one of the most profitable branches of livestock farming. Few farmers realize the importance of size in a draft horse, when put on the market, either at public or private sale. A horse that weighs less than 1,500 pounds is not considered a draft horse in any of the horse markets of the country, yet the mares kept on the ordinary farms are usually lighter than that. This accounts for the small, scrubby lot of horses that are constantly being put on the market at a loss to the breeder.

Do not forget to salt the horse once a week; or, better still, keep salt always before him. He knows best how much he needs.

HEALD'S

Schools Located in
San Francisco, Oakland, Fresno, San Jose, Sacramento, Stockton, Chico, Reno, Nev.; Santa Cruz, Los Angeles, Riverside, Long Beach.
Write for Prospectus to the school you wish to attend.
Main Office, 1215 Van Ness Ave., San Francisco

Genasco
THE TRINIDAD-LAKE-ASPHALT
Ready Roofing

When you want all the buildings on the farm waterproofed to stay—cover them with this genuine asphalt roofing, applied with the Kant-leak Kleet.

Genasco gives real resistance to snow, rain, sun, wind, heat, cold, and fire; and the Kant-leak Kleet waterproofs seams without cement.

Ask your dealer for Genasco. Mineral or smooth surface. Look for the hemisphere trademark.

The Barber Asphalt Paving Company, Philadelphia

Largest producers in the world of asphalt and ready roofing

New York Chicago
San Francisco

Forkner Orchard Cultivator

Does more work with less draft and leaves a better surface mulch than any other cultivator made.
It Works Right Up To Your Trees
Cultivating the entire surface beneath low branches without disturbing boughs or fruit. Write for catalogue and free book "Modern Orchard Tillage."
LIGHT DRAFT HARROW CO., 603 Nevada Street, Marshalltown, Iowa

Note The Rivets

Solid Lengths 10 Ft. 6in.

It is a known fact that riveted seams are the best and strongest seams.
"Western"
Surface Irrigation Pipe is riveted instead of lock-seamed and therefore gives the most in strength and wear. It is the strongest and most economical irrigation pipe on the market.
WRITE US—NOW
for full particulars about this pipe. We'll show you how you can save money and get better results by using it.
We make Riveted Water Pipe, Riveted Well Casing, Steel Tanks and Irrigation Supplies

Western Pipe & Steel Co. of California.
444 Market St., San Francisco,
1758 North Broadway Los Angeles,
Branches:
Fresno and Taft

Fruit Growers, in Convention, Dis

DELEGATES AND VISITORS TO THE CONVENTION OF THE CALIFORNIA FR
COMMISSIONERS,

THE annual joint session of the California State Fruitgrowers' Association and the State Association of County Horticultural Commissioners was held at San Jose the first week in December and was well attended. Representatives from every section of the State were present.

The County Horticultural Commisioners occupied the first day of the session with discussions of their problems and the other three days were taken up with questions pertaining to every phase of the fruit industry from the propagation of fruit tree stock to the marketing of the finished product of the orchard. State Horticultural Commissioner A. J. Cook presided.

Dr. H. J. Webber, who is in charge of the Citrus Experiment Station at Riverside, advocated growers breeding the crops that they grow. "California is in a pioneer period," he said. "This is shown by the fact that we are growing varieties of fruit from Eastern points and from other countries. We must breed our own varieties. Breeding is not new here, but the methods are new. We have the possibilities of obtaining good and new plants that may modify some fruit industry in California. The process of plant selection is one that is worthy of extensive study.

"What we need most in California is a hardy orange and a hardy lemon. Select the seedling that is able to resist the early freezes. Every plant or tree has its individual characteristics, and by experimenting along this line, by means of judicious combinations of characteristics that it is desirable to preserve, new types are evolved

"One of the factors coming out strongly in experiments in citrus culture was that trees receiving nitrogen as a fertilizer were the best yielding. The next highest in yield were those receiving nitrate of soda. Those receiving a complete fertilizer with nitrogen and phosphoric acid gave good yields, but no better than those receiving only nitrogen. Trees receiving only potash showed little improvement or benefit over those receiving no fertilizer. Trees receiving phosphoric acid were somewhat better than those receiving potash, but not as good as those receiving nitrogen. The indications are that nitrogen is very important to fertilization, phosphoric acid less important, and potash least of all. These results refer only to the soil in which the experiments were conducted.

"Another fact shown was that trees receiving nitrate of soda were badly affected with mottle leaf, indicating a diseased condition, while trees receiving organic nitrogen were not so badly diseased. The indications are that nitrogen from organic sources is much to be preferred to nitrogen from mineral sources. In the study of stock, special attention was directed to the neglect of this side of the citrus groves. Seedlings vary greatly in size and vigor of growth. It would seem reasonable to suppose that small stocks would be very likely to produce small trees, lacking in vigor, and it may be that a considerable part of the difference in yield observed in the field is due to the difference in vigor of stocks budded. There can be no question but that the stock is just as important in producing good trees as is the bud.

"It was found that several legumes used as cover crops and turned under as green manures gave as good results as a crop of barley plus 1,000 pounds per acre of nitrate of soda. While vetch is most generally used, several legumes newly imported have given better results in experiments. The best of these legumes are the Tangier pea, the sweet clover (Melolotus Indica), the Vicia Ervella and the Vicia Atropurpurea. The indications from the experiments conducted were that the necessary nitrogen in the production of a grove can easily be obtained by the use of winter cover crops, and it is considered highly important that thorough experiments be carried out to determine the best material of cover crops for citrus groves."

Dr. A. J. Cook went exhaustively into all the phases of the culture of alfalfa. He covered the history of the plant, its various varieties in various countries and the characteristics of each, its introduction into California, its marvelous success here, the conditions and treatment required for the best results, its value as a food plant and as a fertilizer, how to prepare the soil for it, how and when to plant, to irrigate and to harvest. He asserted that it would pay every fruit grower to have an alfalfa field and enough cows and other livestock in proportion to the size of his orchard merely for the value of the resulting fertilizer. He expressed the opinion that in this State the supply of alfalfa, though increasing rapidly through the extension of the alfalfa areas, can never exceed the demand. As a money getter it promises to exceed some of our most extensively planted and best paying fruits. He advocated that California farmers grow their own seed and so make sure of its purity and, possibly, improve its quality.

In the discussion that followed it was brought out that it was not the best practice to put alfalfa in almond, peach or prune orchards where the irrigation essential to alfalfa would drown out the fruit tree roots. Instances were given where pear and apple orchards that were on well drained ground had not suffered.

James Culbertson of Santa Paula, who is interested in a large citrus orchard, told of success in fighting frost. He outlined the history of orchard heating beginning with coal baskets some fifteen years ago to the present burners using distillate. He said that by the use of distillate-burning heaters he was able to save almost the entire crop of his orchard during the extremely cold snap of last winter that was so disastrous to the citrus crop of the southern part of the State. With one heater to a tree the temperature was raised five or six degrees in the orchard within half an hour and the raise easily maintained. Though the fruit was saved from freezing, it was badly sooted, but a method was found of removing the soot without injury to the fruit. His conclusion was that protection from frost was as necessary as irrigation, where the rainfall is insufficient, and that every orchard should have a full equipment to meet the emergency of killing frosts.

Dr. Cook, telling of the work of his office during the last year, said he was somewhat handicapped for want of money, but at the same time much had been done for the good of the State's horticultural interests. The menace of the Mediterranean fruit fly was such that it was necessary to keep up the quarantine service to the top notch of efficiency. This requires large expenditures which must be met. The close and extensive inspection service to guard against the alfalfa weevil also calls for large expenditures. Strenuous efforts are being made to eradicate the white fly which was found at Marysville. For a long time no specimens of the pest could be found, but a recent inspection showed that it was still present. It must be fought to a finish, he said.

Several consignments of parasits and predatory insects have been received from the agent of the commission now in the Orient and it was the hope of the commissioner that this work would result in much benefit to the orchards of the State. Speaking of the State laws affecting the fruit industry, he said:

"Our laws are in need of simplification. They were enacted for a condition no longer existent. It seems to me that it might be wise to have a committee of sincere, able and interested persons representing the commission, the fruit growers, the nurserymen and the county commissioners to commence at once to prepare bills that would meet the approval of all concerned and be ready to present them to the next Legislature for action."

George P. Weldon, Chief Deputy State Horticultural Commissioner, in an address on thinning deciduous fruits, said:

"One of the most important operations in handling our immature crop is thinning. It is too often neglected. The excuse so often given for not thinning is that it costs too much. This is a case where a little extra investment will add greatly to the income of an orchard, whether peaches, pears, apples, or apricots, and I am tempted to say prunes, plums or cherries, are grown.

"It is the desire of every fruit grower to produce fruit possessing a good size, high color, fine quality and uniformity. Such is usually impossible unless thinning is practiced. I do not advocate thinning so heavy as to bring about an overgrown condition, but during seasons of a big crop thin to a point where the more desirable size for the variety can be attained. Thinning as applied to the apple particularly will aid greatly in the fight against the worst insect pest of that fruit—the codling moth. If apples are allowed to grow in clusters so that they touch one another, the larvae not only take advantage of the ideal place of entry between the apples, but the sprayer is placed at a disadvantage, for he finds it extremely difficult to get the spray where it will be eaten by the worms. Varieties that have a tendency to cluster are nearly always riddled by codling moth if the pest is present in large numbers, unless the clusters are broken up by thinning.

"As far as the trees themselves are concerned there are three main reasons why thinning should be practiced. First, it allows them to make a proper growth; second, it prevents

Six County Horticultural Commissio
vention. In the top row, left to righ
Garden, San Joaquin county, and F.
are George Marchbank of Madera co
and George Hecke of Yolo county.

uss Ways to Improve Their Crops

T GROWERS AND THE ANNUAL MEETING OF THE COUNTY HORTICULTURAL ELD AT SAN JOSE

breakage of limbs, and third, it induces uniform annual crops. The desire of most orchardists is to develop a tree to bearing size in the shortest possible time, and to have it bear abundant crops each season. Our trees are too often worked to death and overbearing is one cause of it."

"Standardization" was the subject discussed by F. B. McKevitt of Sacramento. In part he said:

"This term, as applied to California shipping fruit, means the selection of good fruit, in good condition, and proper packing. Its general application to our shipments means the upbuilding and prosperity of the industry. The time has gone by when anything in the shape of fruit can be sold at a good price. That condition existed in the past when production was small and demand great. Now, with the heavy planting of fruit trees all over the country, from Michigan to Texas and from Connecticut to Washington and Oregon, California finds abundance of competition, much of it from fruit produced in orchards near the markets and offered in better and naturally ripened condition. This means in the local fruit a perfection of flavor in respect to which most of our own fruits are necessarily somewhat lacking. It is generally admitted in the Eastern markets that California fruit excels in size and beauty, and its great popularity is the result of its irresistible appeal to the eye. Here, where it is picked ripe from the trees, its flavor is unexcelled, but when gathered in a suitable condition for a ten days' shipment, flavor is the quality sacrificed. If we cannot excel Eastern fruit in every respect, we must practice the most modern and up-to-date methods of packing and handling, so that the attractiveness of our offering will be as near perfection as possible.

Care in the selection of fruit for packing, after it has been carefully picked in suitable condition for a long distance shipment, followed by selection for size, with as good fruit on the bottom and in the middle as on the top of the package, will keep California fruit in the high position which previous years have given it. Standardization is the term covering these requirements. In the opinion of many of our most intelligent growers and shippers the principle of standardization should be made to apply to all shipments of fruit, both green and dried."

Professor H. S. Fawcett of the Experiment Station at Whittier, called attention to some of the injurious fungi and particularly to gummosis.

"Apricot trees are quite subject to gumming," he said, "and are often seen with large masses of gum oozing out of the trunk or larger branches, near which the bark is found to be dead for some distance. One of the reasons for part of this trouble is the entrance of fungi into wounds made in cultivating the orchard or into wounds made by large limbs splitting off. Old trees are often seen with large projecting stubs where limbs have been cut off in the most careless way with an ax. Such trees have been butchered, not pruned. No better invitation could be given than this for wood-destroying fungi to get in their work. The wonder often is that there is not more injury than is seen from such treatment. A tree will often go along bearing good crops for years after being so butchered, but finally it begins to show the results.

"All injuries and large cuts should be cut out smooth and clean in the first place and covered. If the trees have been neglected in the past and are gumming badly, but still worth saving, all the dead bark and wood should be cut out to healthy wood and the cut surface disinfected with Bordeaux paste, and after this is dry the wound should be covered with shellac or paint. When trees become infected cut out the killed bark for brown rot gummosis and scrape off the outer killed bark for gray fungus gummosis and paint the entire trunk with Bordeaux paste. Cover large areas of exposed wood with asphaltum paint or shellac dressing, or some other good covering."

Walnut growing was discussed by Dr. W. W. Fitzgerald of Stockton, and Professor R. E. Smith, plant pathologist of the University of California. It was brought out that the higher altitudes were best suited for the walnut and that the Franquette and the Mayette were the varieties finding greatest favor with growers. The walnut will not thrive on wet soils, yet it requires considerable moisture.

Professor Smith said that the walnut industry was rapidly spreading from the southern part of the State northward and large groves were now to be found in the central and northern sections. All the varieties planted have sustained their reputations and none has gone back. He recommended planters to seek the nursery grafted tree.

Commissioner R. F. Cundiff of Riverside county presided at the meetings of the County Horticultural Commissioners.

Commissioner S. A. Pease of San Bernardino, in an address on the value of county quarantine ordinances in preventing the spread of insect pests and plant diseases, strongly favored control by means of county ordinances strongly enforced.

"We quarantine," he said, "against any State that is known to harbor insects injurious to trees in our State; then would we not suffer just as bad proportionately, or would it not be just as dangerous to our fruit interests that are comparatively clean, to admit nursery stock from any locality in our own State harboring pests not common in those cleaner districts? Inspection alone will not suffice. Authority for the county quarantine was amply provided for by the provisions of the State horticultural law and power given to any authorized officer to destroy any shipment or stock of plants in cases where there is reasonable cause to presume that the shipment may be so infested or infected as to cause damage to orchards or vineyards."

Dr. Cook advised caution and business judgment in the inspection of nursery stock. He advised a State law governing the question of county or district quarantine, and at his suggestion a committee of three was appointed to meet with the fruitgrowers and nurserymen and others interested to draft a law that would be acceptable to all interests and at the same time be effective.

The officers selected for the coming year were: H. P. Stabler, Sutter county, president; S. A. Pease, San Bernardino county, vice-president; and R. S. Vaile, Ventura county, secretary-treasurer.

Resolutions were adopted by the joint organizations requesting that the Federal Government exercise control and use all reasonable machinery at its command effectively to prevent the introduction of the Mediterranean fruit fly from the Hawaiian Islands.

A resolution was adopted requesting that some legislative action be taken toward preventing the shipment of immature fruit. It has been the practice of some shippers to send to Eastern markets consignments of table grapes that were picked while green and sour and unpalatable. These shipments have had an injurious effect on the markets for California table grapes.

Resolutions were also adopted indorsing the efforts to bring about a standardization of fruit packs, and commending the home rule in taxation movement.

who took an active part at the con- e George Harney, Yuba county; William I. Bloomer, Sacramento county. Below Frank T. Swett of Contra Costa county,

Wheat Seed Bed

A plot of ground which had not been plowed for four years, but had been disked just before planting, made a yield of nine and one-third bushels to the acre, reports the Kansas Experiment Station. The average for the last three years of land prepared in this way was six and two-thirds bushels per acre, which is not sufficient to pay for cost of production. Plots double disked on July 15 and plowed August 15 and September 15 made twenty-nine and three-fourths and twenty-seven and one-half bushels, respectively, per acre.

This is a gain of twenty-one and one-third bushels per acre in favor of plowing, and a gain of two and one-fourth bushels in favor of the early date for plowing. Double disking not only insures an increased yield of wheat, but holds moisture in the ground so that the plowing can be done later with greater ease and less expense.

Honey in Cartons

The best grades of comb honey should be put on the market in neatly printed cartons. They are a great convenience for the dealer, they serve to keep honey free from dust, and also prevent marring the delicate comb when handling from the grocery to the consumer's kitchen.

Cartons are so inexpensive and so useful that it is surprising that more of the best comb honey is not put on the market in them.

Of course, those using cartons should be careful to see that only the most perfect sections of honey are put into them. A honey purchaser will seldom buy cartoned honey the second time if she has been once deceived—by getting, for instance, a partly filled comb in a carton; or, perhaps, a dirty-looking comb.

Cartons should be used more extensively than they are now, as they also furnish an added opportunity to send printed honey information with each comb of honey sold.

Clean up the yard and farmstead generally. Plan to set out a few more ornamental trees and plants.

Two O.I.C. Hogs

Weigh 2806 lbs.

Why lose profits breeding and feeding scrub hogs. Two of our O. I. C. Hogs weighed 2806 lbs. Will ship you sample pair of these famous hogs on time and give agency to first applicant. We are originators, most extensive breeders and shippers of thoroughbred hogs in the world.

U. S. Govt. Inspected Herd

Write for Free Book, "The Hog from Birth to Sale."

FREE—One 15-oz. can of our celebrated Silver Live Stock Powder for free trial. Send for it today.

THE L. B. SILVER CO.
1538 Vickers Building Cleveland, Ohio
Established 1863—50 Years' Success

Clearing Stump Land With A Monarch Steel Stump Puller

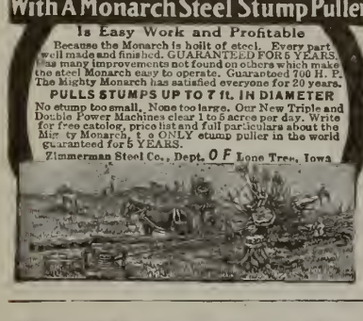
Is Easy Work and Profitable

Because the Monarch is built of steel. Every part well made and finished. GUARANTEED FOR 5 YEARS. Has many improvements not found on others which make the steel Monarch easy to operate. Guaranteed 700 H. P. The Mighty Monarch has satisfied everyone for 20 years.

PULLS STUMPS UP TO 7 ft. IN DIAMETER

No stump too small. None too large. Our New Triple and Double Power Machines clear 1 to 5 acres per day. Write for free catalog, price list and full particulars about the Mighty Monarch, the ONLY stump puller in the world guaranteed for 5 YEARS.

Zimmerman Steel Co., Dept. O F Lone Tree, Iowa



FOR THE "LAND'S SAKE"

BUY A

Price $15

which has TELESCOPE enabling you to read the Target over 400 yards away, and

TERRACE, DITCH, TILE DRAIN, IRRIGATE

your land properly, and save surveyor's fees. It is sold by up-to-date hardware and general merchants everywhere, and guaranteed to be the most

SIMPLE, ACCURATE, DURABLE AND COMPLETE

outfit ever made for all farm work. If your dealer hasn't one in stock, he will order for you from a nearby hardware jobber.

Write today for description of Level, and details of our MONEY BACK GUARANTEE.

BOSTROM-BRADY MANUFACTURING CO.
109 Madison Ave., Atlanta, Ga.

THE "SUPERIOR"

SPECIAL ALFALFA DRILL

20 Discs 4 inches apart.

This Drill will pay for itself in one season on 33 1-3 acres in the saving of seed alone.

WE CAN PROVE IT TO YOU

Write for Prices and Catalogue

THE H. C. SHAW COMPANY
Stockton, Cal.
Wholesale Distributors

Brains Needed for Dairy Success

By A. A. Selden

IT is not every dairyman that can have pure bred cows. It takes time to produce them, or the cost may be beyond reach. Therefore, it is the dairyman's duty to make the best use of that which he has, and to use his brains in getting the largest profit possible. Each man must work with the tools he has.

I made the statement in last month's "Orchard and Farm" that every cow would respond to every ounce of food given her and to every moment's time and attention. And in this additional care and attention constitutes the sole reason for success and the neglect to give it is the sole reason for failure in dairying.

It is not so much the breed of the cow as it is the ability to get her to eat a greater amount of feed and turn it into milk and butter-fat that spells success. And this ability is all a matter of developing the individual cow to get her into a condition to produce the greatest amount of milk that her frame and constitution will permit.

It must be admitted that cows with a long line of ancestors that have been bred and given the care and attention needed to produce great milkers have an advantage over those that have been neglected in these particulars. They more readily respond to care and they show the effects of neglect to a greater extent.

The Kansas dairy school, under Professor Erf, some few years ago, bought some wild 3-year-old range cows in eastern Colorado and placed them in the dairy school barn at Manhattan, Kas. Every care and attention was given them to develop them along dairy production lines. The results were remarkable. In only two years they developed into profit producers. But they never could be expected to equal in production high-bred cows that had received equal attention. Such cows as these, it seems to me, would be a good foundation on which to build a grade herd of dairy cows, as they have the best of constitutions on which to build. In starting to build up such a herd on such a foundation it would be an absolute essential to have a bull of the finest blood, of perfect health and of known production, and this without regard to what might be his cost. In this way a grade herd could be built up that would be clean, healthy and, with proper development, large producers of milk and butter-fat.

To show how necessary it is to making profits to be able to get the utmost amount of feed into the cow we have only to take the records of a testing association in Iowa. It is shown by these records that the ratio of profits is more than three to one to the amount of feed eaten over and above the amount needed for the upkeep of the cow. It is shown that the cows, without any regard to breed, that consumed $29.34 worth of feed a year gave back a profit of only $6.09, while the cow that consumed $42.45 worth of feed gave back a profit of $49.75, and in another case, not in these records, where cows consumed $54.65 worth of feed they gave back a profit of not less than $66 a year. Taking the whole list, as shown in the records, it proved conclusively that it is the amount of food a cow consumes that determines the amount of milk that she will give and the amount of profits she will make the dairyman. And it seems from these records that the whole blame for poor production was neglect on the part of the dairyman to develop the cow. It takes brains to accomplish this. Any one can build a fire quickly if they have a match and all the wood they need, but it takes brains and patience to get a fire from two bits of dry wood. Yet it can be done.

Every dairyman should use his brains and the land that he works to get that land to produce the greatest amount of food and as many different kinds as he can that are good for his dairy cows to eat to turn into milk and butter-fat. He should learn to combine these in as many different ways as he can, to induce the cows to eat more and more each day by placing before them these new combinations. The more they eat the more profit to the dairyman and it is for the profits that the dairyman is in the business.

The profit derived from the various feedings is shown in the following table, taken from the records of the Iowa testing association mentioned. This record was made without regard to breed:

Yearly Feed Cost.	Profit.	Yearly Feed Cost.	Profit.
$29.34	$6.09	38.24	38.11
30.14	12.40	40.60	41.79
31.10	20.23	42.45	49.71
33.92	24.41	54.55	66.00
35.67	31.67		

This record shows that by using less than double the amount of feed the cows consuming that feed yielded nearly eleven times the amount of profit. In the illustration given in the records it will be seen that it took about $27 worth of feed for the upkeep of the cows on an average without regard to the breed, and that for every $2.70 worth of feed consumed added to that amount there was a profit given back of $6.60 for each cow in the whole number in the association.

These figures should set every dairyman thinking.

The dairyman that depends on one kind of feed for his cows is not using his brains nor is he getting anywhere near the amount of profit from his cows that he should. Does it require any brains to raise alfalfa, turn the cows loose on it to pick their own living and not know that they are destroying at least 40 per cent of the food value? Compare such a set of brains with those of the dairyman who has not only alfalfa but oats and barley and corn, vetch, cow peas, Kaffir corn, sorghum and all manner of root crops and pumpkins. Such a man would have a silo and would see that there was no waste of food on the ranch. There would be no limit to the combinations of feed that he could make. He would be able to develop his cows to the utmost of their capacity and as his profits would be three times the cost of the feed consumed the profits would be in direct proportion to the amount of brain work he put into his dairy work.

It takes brains and the right use of them to get the most profit from such dairy stock as we have.

Rye Meal for Cows

The Pennsylvania experiment station has found that rye meal as a part of properly balanced ration for dairy cows is sufficient in milk and butter production to an equal weight of corn meal.

Quick Milking Best

Slow milking causes a loss of cream. It has been proved that the cow milked by a rapid milker yields more butter fat than the same cow does when milked by a slow milker.

Cows and Soil Fertility

The fertility of the soil can best be maintained by the liberal use of barnyard manure, and the dairy herd not only makes this possible, but dairying is also more remunerative than almost any other branch of farming when it is properly carried on.

I'm Feeling Fine Thank You

A nervous, discontented cow is always a poor milk producer because Nature is attempting to rebuild her wasting system instead of attending to the natural healthy functions of producing and re-producing.

A cow can be "off color," just as a human being can be—and like a human being, she needs the proper medicine to build up the sluggish organs. KOW-KURE is the standard remedy for such cow diseases as Abortion, Retained Afterbirth, Barrenness, Bunches, Milk Fever, Scouring, Red Water and Lost Appetite. KOW-KURE puts sick cows "on their feet"—makes profitable cows of backward ones.

Try KOW-KURE on your poor milkers. Most feed dealers and druggists sell it, in 50c and $1 packages. Write for free copy of our book "Cow Diseases."

Dairy Association Company, Mfrs.
Lyndonville, Vt.
Distributors for Pacific Coast:
Germain Seed & Plant Co., Los Angeles, Cal.
Portland Seed Co., Portland, Oregon
Spokane Seed Co., Spokane, Wash.

REDWOOD TANKS

I sell to the consumer. Box shook and Boxes, Trays, Lumber, Millwork, Doors, Windows, Moulding, Wagon tanks, Spraying tanks. Independent.

R. F. WILSON, Stockton, California

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, always fresh and reliable, they are used by over 80 per cent of California and Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.

10-dose pkge Blackleg Pills.....$1.00
50-dose pkge. Blackleg Pills..... 4.00
Cutter's Blackleg Pill Injector.. 1.50

Pills may be used in any injector, but Cutter's is simplest, strongest and easiest to use.

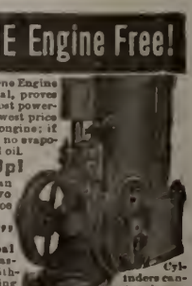
Every package dated, unused pills returnable for free exchange for fresh after date on package. Do not use old vaccine, or of uncertain age (ours or any other) as it affords less protection than fresh.

Discounts: 250 doses, 10 p.ct.; 500 doses, 20 p.ct.

Insist on Cutter's. If druggist doesn't stock, order from Laboratory, giving address plainly. We prepay charges and ship promptly. Send personal check or M. O.

THE CUTTER LABORATORY, BERKELEY, CAL.

Use KEROSENE Engine Free!



"Amazing "DETROIT" Kerosene Engine shipped on 15 days' FREE Trial, proves kerosene cheapest, safest, most powerful fuel. If satisfied, pay lowest price ever given on reliable farm engine; if not, pay nothing. No waste, no evaporation, no explosion from coal oil.

Gasoline Going Up!

Gasoline is 9c to 15c higher than coal oil. Still going up. Two pints of coal oil do work of three pints gasoline.

Amazing "DETROIT"

—only engine running on coal oil successfully, uses alcohol, gasoline and benzine, too. Starts without cranking. Only three moving parts—no cams—no sprockets—no gears—no valves—the utmost in simplicity, power and strength. Mounted on skids. All sizes, 2 to 20 h. p., in stock ready to ship. Engine tested before crating. Comes all ready to run. Pumps, saws, threshes, churns, separates milk, grinds feed, shells corn, runs home electric lighting plant. Prices (stripped), $29.50 up. Sent any place on 15 days' Free trial. Don't buy an engine until you investigate the money-saving, power-saving "DETROIT." Thousands in use. Costs only postal to find out. If you are first in your neighborhood to write, you get Special Extra-Low Introductory price. Write! (184)

Cylinders cannot carbonize

Detroit Engine Works, 515 Bellevue Ave., Detroit, Mich.

Proper Methods of Milking

—By John Underwood—

THE quantity of milk and butter fat produced by cows depends in no small degree on the manner in which the cows are milked.

Cows may be ever so good or ever so well fed but if not properly milked the results will be unsatisfactory. The reason for this is the fact that good dairy cows possess a highly developed nervous system with which the secretion of milk is intimately associated. Whatever, therefore, reacts on the nervous system of the cow will react in like degree on the secretion of milk.

The secretion of milk takes place almost entirely during the process of milking. No matter how large the udder the cow may show just previous to milking it rarely contains as much as a quart of milk, the distention of the udder being due to blood from which the milk is elaborated.

It is owing to her high nerve development that a cow is so sensitive to excitement, boisterousness, unkindness, rough treatment and allied abuses which always react so unfavorably on the production of milk and butter fat. Especially disastrous are the effects of abuses administered just previous to or during milking.

A change of milkers has an unfavorable influence on the yield of milk. A cow that has become thoroughly accustomed to a certain milker will feel restless and uneasy with a new milker, which is nowhere more plainly indicated than in the milk record sheet. A change of milkers, furthermore, almost always means a change in the manner of milking and therefore a change in the stimulation of the udder. Since the stimulation of the udder by the milker is the cause of milk secretion it is evident that a change in the method of stimulation will affect the yield of milk and butter fat. Changing milkers should therefore be avoided as far as possible.

It is undoubtedly due to the greater stimulation of the udder that fast milkers always obtain more milk than slow ones. In my experience with milkers, and I have employed many of them, I have never had a slow milker that proved satisfactory, no matter how faithfully or conscientiously the milking was performed.

One of the vital things in milking is to get all the milk at each milking —that is to milk a cow dry. Whatever milk is left in the udder is not only lost to the milker but acts as a check on further secretion, so that the practice of not milking cows clean or dry results in a gradual shrinking of the milk flow and in an early drying up of the cow. Then, again, the loss of the strippings means the loss of the very best milk. The first milk drawn from a cow usually contains less than one per cent of fat while the strippings may contain as much as fourteen per cent.

To obtain the best results from a dairy regularity must be made the watchword. Cows must be milked regularly, at a fixed time, morning and night. Milking an hour sooner or later than the fixed period interferes much more seriously with the milk yield than is commonly supposed. Irregularity in feeding also affects the milk flow. If, for example, cows that have been accustomed to receive their feed just before milking should receive it at times after milking a reduction in the yield would surely be noticed. This is just what might be expected. Withholding the feed will make the cows restless and discontented, which will so jar their nervous system as to cause a drop in the milk flow.

Another matter to see to is to have the periods between milkings as nearly equal as possible. This is especially important with heavy milkers. If cows are being milked at a certain hour in the morning they should preferably be milked at that hour at night. The more uniform the periods between milkings the more uniform the secretion of milk and consequently the greater the production. The time between milkings also influences the richness of the milk. If the two milking periods are unequal it will be found as a rule that the milk from the shorter period is the richer.

Sore Eyes of Cattle

There is a disease among cattle, seen mostly in the summer, affecting the eyes and causing many of them to go blind. This is an infectious sore eyes, and by cattlemen on the range is spoken of as "pink eye" of cattle.

This disease is undoubtedly infectious writes George H. Glover of the Colorado Agricultural College, and spreads from one animal to another, probably through the medium of flies. The disease runs its course in an animal in from one to two weeks and may result in total blindness, though usually the sight is not impaired. Only one eye may be affected.

The first symptoms is a profuse flow of tears. Soon the eye becomes very sensitive to light and is kept constantly closed. The eyeball becomes clouded and gives the appearance of a film over the eye.

Animals affected with this disease should be confined in a comfortable stall with the light excluded and given laxative, nourishing food.

A simple treatment consists of bathing the eyes with a strong solution of boric acid, or perhaps what will be still better, a few drops of the following mixture may be placed in the eyes with a dropper several times a day: Add half a grain of zinc sulphate and ten grams of boric acid to an ounce of distilled water.

The animal should be protected from the flies, as they greatly increase the irritation to the eyes and probably spread the infection to other animals.

Feeding Dry Cows

During the eight or ten weeks that cows go dry their food should be chiefly roughage. A daily allowance of two pounds of bran or oats, or a mixture of two parts each of bran and oats and one part of linseed meal or corn oil meal, makes a proper feed for a cow near calving. Some roots, cabbage, pumpkins or squashes are also very good. Highly carbonaceous roughage, such as straw and corn stalks, is not good at this particular time. Such feeds, with cold water, cold drafts, or lying out at night on damp or cold ground, are the chief causes of caked udder or garget.

Feed for Dairy Cows

The Nebraska station gives the following brief and simple rules as an aid in determining the amount of feed required by each cow:

"Feed all the roughage, such as alfalfa, corn silage, etc., that the cow will eat up clean.

"Feed approximately one pound of grain for every three pounds of milk produced per day.

"Give the cows as much feed as they will consume without gaining in weight.

"Feed some succulent feed, such as corn silage or roots, to make the ration more palatable.

"Be prepared to supplement the pastures by feeding silage when the dry season sets in."

There is not much gain in breeding a heifer before she is 18 months old, but there is considerable risk.

Conservation of your soil

PURE ANIMAL MATTER AMMONIATES

GOLD BEAR FERTILIZERS

FOR CALIFORNIA SOILS

Your soil possesses wonderful possibilities, if you use it right.

There are in it powers of recuperation and crop producing values awaiting the knowledge to develop them.

Animal matter fertilizers release the active forces of the soil and turn them into crops for you.

Write us for booklet and let us tell you what your soil needs and how to treat it.

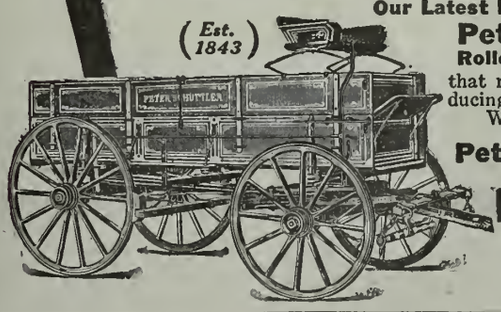
WESTERN MEAT CO.

703 TOWNSEND ST., SAN FRANCISCO

Old Reliable
Peter Schuttler
The One Best

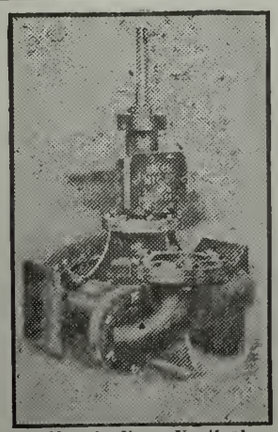
Made in Chicago for Over 70 Years
Stands the Wear—Without Repair

(Est. 1843)



Our Latest Improvement is the
Peter Schuttler
Roller Bearing Wagon
that runs ⅓ lighter by reducing the friction.
Write for Catalog.

PeterSchuttlerCo.
Chicago



Krogh New Vertical Water Balanced Pump

KROGH'S
NEW
VERTICAL PUMP

The Krogh New Water Balanced Vertical Pump contains many new and valuable improvements, same being fully explained in our Bulletin R-10, which will be mailed upon request.

We have a branch in Los Angeles at 206 N. LOS ANGELES STREET

The pump can be seen in operation at our place of business.

KROGH MANUFACTURING CO.

149 Beale Street San Francisco

During the Moulting Season

Do not neglect your hens. Feed daily **GOLDEN EAGLE EGG FOOD**, either as a dry mash, or in a crumbly form. Bring them through the moult quickly and keep them in good condition during this period.

DON'T PUT OFF TO-DAY,
AS THE HENS MAY CEASE TO LAY'

Golden Eagle Milling Co.
PETALUMA CALIFORNIA

WINDOWS 80c EACH

8x10 8-lt. windows, glazed ..... $ .80
2 ft. 4 in. x 4 ft. 6 in. windows, 2-lt. glazed $1.40
2 ft. 8 in. x 6 ft. 8 in.—1¾ in. 5-panel Oregon Pine Doors $1.50
Sash Door, 2 ft. 6 in. x 6 ft. 6 in., 1¾ Oregon Pine, like cut, glazed, ... $2.65
Window Glass, 8 x 10 ..... $ .05
Window Glass, 24 x 28 ..... $ .40
Roofing, best 2-play composition, per sq $1.50

We Manufacture and Sell Only New Goods.

No wreckage or odds and ends. Our motto is "From Forest to Home." Our 114-page catalogue lists everything **at Bargain Prices** you need in building, including Sash, Doors, Glass, Paints, Varnishes, Hardware, Building Paper and Roofing. Let us send it to you now before you build. Address

Contractors and Builders' Supply Co., Inc., Oakland, Cal.
Corner Fifth and Cypress Sts.

Problems of the Poultryman

—By Prof. M. E. Jaffa—

MY chickens have been troubled with tick, or "jigger" fleas. The insects fasten themselves to the comb and wattles and throat, also some on top of the head. I have used powder, but it seems to have no effect on the fleas as they burrow in so. I also tried an ointment I made with lard and carbolic acid. I rubbed it well into the affected parts. Can you suggest any other remedy?—R. B., Orcutt, Cal.

The first step in getting rid of these little parasites is to thoroughly disinfect the houses. One of the most effective remedies of all for spraying and disinfecting the houses is as follows: Make a mixture of thin crude oil and 10 per cent carbolic acid. If the crude oil is too thick, thin it with kerosene or distillate. If all the cracks and crevices of the floor and walls are flooded, the roosts thoroughly painted and all the quarters completely impregnated with this mixture, it seldom fails to rid the poultry of the ticks, because none of them can live in it.

As a rule, good carbolated vaseline has proved very effective, killing the "jigger" or stick-tight flea. Perhaps the ointment used was not strong enough.

Another remedy which has been suggested is corrosive sublimate. Apply this very carefully to any fleas that are noticed on the comb and wattles, but be extremely careful that none of the chemical gets into the chickens' eyes as it would blind them and also be very careful that the chickens swallow none of it, as it is extremely poisonous.

Still another remedy which is recommended is a saturated solution of salt and vinegar.

PROF. JAFFA: Would you please let me know if kafir corn can be successfully used as a substitute for cracked corn? I am feeding a mixture of wheat, crushed corn and rolled barley for the grain feed.—C. L., Petaluma.

Kafir corn may be and is successfully used as part of the grain ration. As far as the nutritive value is concerned, there is not much choice between the different varieties of corn as indicated by the tabulated statement following. It would appear that the corn to use would be that which one could get at the lowest figure, provided, of course, that it is good, clean and wholesome.

	Water, Per Cent.	Ash, Per Cent.	Protein, Per Cent.	Starch, Sugar, etc. Per Cent.	Fiber, Per Cent.	Fat, Per Cent.
Corn, broom	11.63	3.62	9.40	65.95	5.17	4.23
Corn, Egyptian	14.30	2.03	10.06	68.35	1.97	3.29
Corn, Egyptian, brown	10.99	1.78	11.20	69.94	2.29	3.80
Corn, Indian	10.60	1.50	10.30	70.40	2.20	5.00
Corn, Kafir	9.30	1.50	9.90	74.90	1.40	3.00
Corn, Milo Maise	9.60	2.30	10.70	72.20	3.00	2.80

A variety of grains is to be preferred for several reasons. The poultry appreciates variety as much as human beings. If a feeder is using only one grain and should later on be able to secure another grain of equal nutritive value at a much lower price per ton, he would not be able to take advantage of the market prices in view of the fact that we cannot change the food of the bird suddenly. If they have been accustomed to wheat they will not take kindly to barley. If they have been accustomed to barley they will not take kindly to wheat. Similarly with reference to other grains.

If, on the other hand, the grain ration has been made up of a variety, then the feeder can increase or decrease any one ingredient in accordance with the market rulings.

PROF. JAFFA: Will you please tell me what is the matter with my Rhode Island Red pullet? It is six months old and up to a few days ago seemed all right. I had her in a pen with others of the same age, when on going to feed her one morning I noticed she acted rather strange, so I put her by herself and gave her some Pratts' Poultry Regulator. It didn't seem to help, so I gave her several doses of olive oil, yet she is not any better. When you touch her she acts like she wanted to stand on her head, falls all over herself, then will get up, stagger a little, and start across the pen until she comes to the wire, does not seem to see it, and if you give her feed of any kind she puts her head to one side, low to the ground, and tries to pick at it, but misses it and isn't able to get any. She is getting poor as I cannot feed her. She has been this way almost a week. I have been feeding her the mixed chicken feed night and morning with plenty of green alfalfa, clabber milk and fresh water and grit before them all the time and shade. The others seem to be all right, eat heartily and are looking good now.—M. M., Needles.

The symptoms would lead one to diagnose the trouble as congestion of the brain.

A number of abnormal physiological conditions may lead to a congestion of blood in the brain. This is usually associated with a diseased condition of other organs, and hence often occurs as a complication with other diseases. It is sometimes due to injury of the head.

Diagnosis—Pearson ("Diseases of Poultry") gives the following dignosis of this disease: "It is characterized by staggering, stupor, unusual movements such as walking backward or walking in a circle, unusual and irregular movements with the wings and feet and twisting the head backward or to the side. Sometimes the bird will fall on its side and make peculiar movements with its feet and wings as though attempting to run or fly."

Etiology—The congestion of the brain is sometimes due to blows on the head or to fright or other intense excitement. Often it is associated with acute indigestion or with the presence of parasitic intestinal worms.

Treatment—Apply cold water to the head. Administer a laxative (2 teaspoonnful of castor oil or 30 grains of epsom salts given in water or 1½ grains of calomel). Keep the fowl in a cool, quite place. If this treatment is not efficient. Salmon recommends 1 to 5 grains of bromide of potassium dissolved in 1 tablespoonful of water three times a day. If intestinal worms are found in the droppings after the laxative, treat for the removal of these parasites.

Prognosis—The bird may recover if the cause is removed.

CONKEY SAYS—Don't be "Too Late!" You have seen your fine birds moping, sneezing, coughing, with heads swollen and eyes watering. You have seen them fight for breath and die. That's R-O-U-P. It's humane to relieve them—it's dollars saved to cure them. Conkey's Roup Remedy does the work. 25c, 50c and $1.00 sizes. Sent anywhere prepaid if your dealer does not have it in stock. Easily given in the drinking water, so that the fowls take their own medicine. A fine preventive also. Always treat colds and roup promptly, or you may lose your whole flock. Don't wait; don't be "Too Late."

At your dealers—or send to Germain Seed Co., Los Angeles; Coulson Poultry & Stock Food Co., Petaluma; Inland Seed Co., Spokane; Routledge Seed & Floral Co., Portland; Seattle Seed Co., Seattle; Brackman-Ker Milling Co., Victoria, B. C. Western Distributors for the G. E. Conkey Co., of Cleveland, O.

Composition of Egg

More than three-fourths of an egg is water, so you can see how necessary it is that the fowls should be kept supplied with an abundance of water. It should be pure, and be given to them in some way they cannot get it foul.

Disinfecting Poultry Plants

By Prof. M. E. Jaffa

THOROUGH disinfection of the poultry plant may begin with the house, but it should not end there. Many forms of bacteria are found in larger numbers in the yards than in the houses, and many parasites require to be exterminated on the body of the fowl.

There are three methods to choose from in disinfecting the yards. Fire is the very best disinfectant known to science as yet, but it must be thorough, as must be everything else, in order to be effective in its results. If the infection is recent and known to involve only the surface soil the yard may be sprinkled with kerosene and flamed. This can only be done where there is ample protection from fire afforded the houses.

Flaming the yards does not affect the earth worms, etc., that are below the surface and these may come up later on, after a rain, bringing with them parasites, eggs of gape worms, etc., that they carry in their bodies.

For this reason it may be necessary to give a second such treatment later on, or to use a top dressing of lime and plow it under. Dr. George Morse of the Bureau of Animal Industry advises the use of this top dressing, etc., in cases where fire cannot be used. He also recommends deluging the ground with sulphuric acid (1 part to 9 parts of water) or carbolic acid (1 part to 19 parts of water).

Houses and yards may be thoroughly disinfected and yet some fowls may still be tormented by the presence of lice, mites and various parasites. They should be examined occasionally as a matter of routine to see if the bodies are free from these pests. Oftentimes their presence is made known by definite troubles, as in the case of the depluming mite, but in many instances their presence is suspected simply by the droopy or poor condition of the fowl.

Lice powders, in plenty, are upon the market and most of them give excellent results if properly used. The Maine Station gives a formula for the home manufacture of a very satisfactory and very cheap powder, as follows:

Take 3 parts of gasoline and 1 part of crude carbolic acid (90 to 95 per cent strength), or if this strength can not be obtained, take 3 parts of gasoline and 1 part cresol. Mix these together and add gradually, with stirring, enough plaster of Paris to take up all the moisture. As a general rule it will take about 4 quarts of plaster to 1 quart of the liquid. The exact amount, however, must be determined by the condition of the powder in each case. It must be mixed in such a way as to bring every part of the plaster into contact with some liquid. When it is finished the resulting mixture should be a dry, pinkish brown powder having a fairly strong carbolic odor and a rather less pronounced gasoline odor.

This powder should be worked into the feathers of the birds, especially in the fluff around the vent and the ventral side of the body and about the fluff under the wings. Its efficiency can be easily demonstrated in the following manner: Apply the powder to a bird that is afflicted with lice and after a minute or two shake the powder off the fowl, over a paper, loosening the feathers with the fingers at the same time. Dead and dying lice will drop on the paper in great numbers.

Many of the failures that are reported are due to the fact that the poutryman expects one application to accomplish the result. He forgets that if the lice have been on the fowl for any length of time, there are numbers of "nits" or eggs, as well as live vermin, to be reckoned with. These "nits" are not destroyed by the powder, and will hatch out four or five days later, and must be destroyed at that time, before they, in turn, are mature enough to deposit their eggs. In very bad cases, three applications at intervals of four or five days may be necessary to render the fowls absolutely lice free.

Some experienced people prefer dipping the fowls to using the dry method. Various solutions are used for the purpose—various sheep dips, as car-seul, or a strong decoction of tobacco. If the fowls are to be handled out of doors the temperature must be 80 degrees in the shade and the dipping solution should be about 98 degrees—a blood heat. When the weather is cold, it would be advisable to bring them into a warmed basement and keep them there until they are dry.

The fowls should be dipped one at a time, care being taken to keep the head out of the bucket. The solution may be applied to the head, very carefully with a sponge so that it does not reach the eyes. The feathers must be lifted with the hands so that all become saturated and the solution reaches the skin. When done out of doors, it is well to tether the birds to a fence so as to keep them in the sun until they are dry.

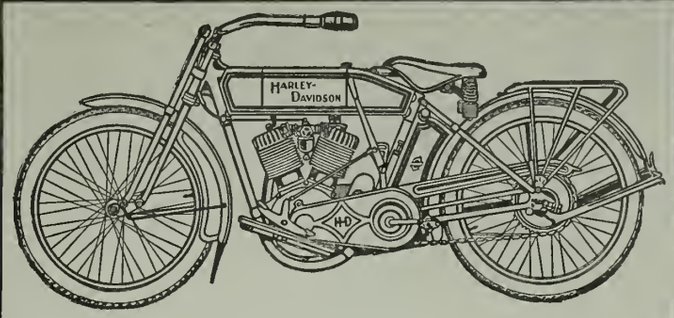
Other parasites such as the depluming mite and those that cause scaly-leg, ticks and fleas, etc., are usually treated with carbolated vaseline or other ointments of the same nature. Scaly legs must be cleaned first in order that the ointment may reach the mites.

When all the germs and pests have been gotten rid of, a return to the prescribed methods of cleanliness and a strict adherence thereto will keep the plant in a sanitary condition for many a day to come.

Where the ground space is sufficient to allow of the system of movable houses and yards, it is an easy matter to change the flocks to fresh quarters when any serious infection occurs. After the house has been thoroughly fumigated it is pulled away from the contaminated soil by a strong horse or two and deposited on a fresh piece of clean, healthy ground, where the fowls may enjoy the new supply of green feed, bugs and worms while the old yards are made habitable once more.

Even when serious infection does not necessitate the change of location, the movable house system is a great advantage to the farmer. It gives him an opportunity of rotating the crop and the chicken yard, thereby benefiting by the fertilization of the soil due to the presence of animal excreta in the old ground. And the chickens benefit so greatly by the fresh quarters that the small expense and trouble entailed are fully compensated for.

When no disease has existed the old ground is fully sweetened for future flocks of birds by simply being turned over and sowed with a crop of barley, oats, cowpeas, or any feed desired. But when there has been trouble in the flocks due to either germ or parasite, reliable disinfecting methods should first be employed and the crop sown afterward.



Startling, Exclusive Improvements Mark the 1914 Harley-Davidson

Step Starter Starts Machine With Rider in the Saddle and Both Wheels on the Ground

In case the rider accidentally stalls the motor in crowded traffic or on a steep hill it is no longer necessary to dismount, perhaps in the mud and find a level place to set the machine upon the stand in order to start the motor. Instead a downward push on either pedal—the step-starter does its work, and the motor begins again to throb.

Selective Type of Two-Speed

The Harley-Devildson two-speed gear (another patented feature) ia located inside the rear hub, thus avoiding dust, dirt or demage. Its speeds are aelective end the rider cen shift from low to high, or high to low, or to neutral, at any time, whether the mechine is stending still or in motion.

Ful-Floteing Seat

For the third successive yeer the Ful-Floteing Seat is standard. This patented device floets the weight of the rider between two conceeled aprings, essimilating ell jers end vibretion due to rough roeds.

Double Clutch Control

The patented Harley-Davidson clutch can now be opereted either by a foot lever on the left foot board or by a hand lever. The foot lever does eway with the necessity of taking either hand off the handle bars, e great convenience when riding through send or mud.

Double Brake Control

The new Harley-Davldaon Band Breke (patented) can be opereted either by a foot lever or by back pedaling on either pedel.

Folding Foot Boards

All models ere equipped with Folding Foot Boerds in addition to the reguler pedels.

We will gladly send you on request our complete 1914 catalog giving full details of these and forty other improvements

Harley-Davidson Motor Co., 880 A Street, Milwaukee, Wis.

Producers of High-Grade Motorcycles for More Than Twelve Years

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

New Model 27 **Marlin REPEATING RIFLE**

.25 Rim Fire—for all game smaller than deer. Uses cartridges of surprising accuracy up to 200 yards, powerful and reliable but *cheap* because *rim-fire.*

Rifle with round barrel **$13.15**

7 Shots

Made in .25-20 and .32-20 calibres also; octagon barrel only; $15. Use both regular and high velocity cartridges. Powerful enough for deer, safe to use in settled districts, excellent for target work, foxes, geese, woodchucks, etc.

Its exclusive features: the quick, smooth working *"pump" action*; the wear-resisting *Special Smokeless Steel* barrel; the modern *solid-top* and *side ejector* for rapid, accurate firing, increased safety and convenience. It has take-down construction and *Ivory Bead* front sight; these cost extra on other rifles of these calibres.

Our 128 page catalog describes the full *Marlin* line. Sent for three stamps postage. Write for it.

The Marlin Firearms Co. 116 Willow Street New Haven, Conn.

CONKEY SAYS—Your fowls will look better, act better, do better in every way during the long winter months if you sprinkle a little of Conkey's Laying Tonic in the mash feed once a day. It is a conditioner and tonic that improves the ration and turns the high priced feed to egg production. **WINTER EGGS** bring the big profits. We also recommend this for use with breeding stock, to improve fertility. For sale by all poultry supply dealers on plain guarantee Your Money Back if Not Satisfied in Every Way. 25c, 50c and $1.00 sizes. Pails, $1.60 and $3.00.

Express extra on all sizes Sample ¼ lb. mailed for 4c postage.

At your dealers—or send to Germain Seed Co., Los Angeles; Coulson Poultry & Stock Food Co., Petaluma; Inland Seed Co., Spokane; Routledge Seed & Floral Co., Portland; Seattle Seed Co., Seattle; Brackman-Ker Milling Co. Victoria, B. C. Western Distributors for the G. E. Conkey Co., of Cleveland, O.

FREE CYPHERS COMPANY'S Big Poultry Guide

—rich with valuable information—latest experiments—newest methods and ideas for money-making poultry and egg production. Eight vitally helpful chapters telling just what you need to know. Fully illustrated. 244 pages. Tells about

Cyphers Incubators and Brooders

—the World's Standard Poultry Equipment. Substantial, fireproof, dependable machines that insure best results—no heat or moisture troubles.—1914 promises to bring greatest demand, best prices and largest poultry profits in years. Be prepared to get your share! Write for big free book.

Cyphers Incubator Co., Dept. 73
Oakland, Cal., Buffalo, N. Y., New York City, Chicago, Ill., Boston, Mass., Kansas City, Mo.

WRITE TODAY

FAIRMEAD for your farm.

Where alfalfa produces eight tons per acre per year.

Where olives, figs, peaches, etc. pay big.

Unlimited water. Rich, easy-to-work soil.

Good neighbors and schools. Splendid markets.

19,000 acres now being subdivided into 10, 20, 40 acre tracts.

Bottom prices—easy terms.

Send for free booklet, "Fairmead for Farmers."

Co-Operative Land & Trust Company Owners.
593 Market Street, San Francisco.
214 Los Ang. Inv. Bldg., Los Angeles.

Molting Hens

require a good tonic and conditioner to keep them in health and get them laying again quickly.
COULSON'S No. 3 CONDITION Powder will do it. Write for particulars and special delivered price.

COULSON CO.
Petaluma, Cal.

AXLE & GREASE
LARGE HANDY BUCKET C&S SMALL CAN
WHITTIER COBURN CO. S.F. SOLE MFRS.

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind. Largest pipe works in the West.

WEISSBAUM PIPE WORKS,
165 Eleventh St., San Francisco

When answering advertisements, please mention "Orchard and Farm."

Raise Sunflowers

A QUICK glance at the plants of some of the egg ranchers of California is enough to convince the ordinary individual that altogether too few poultrymen realize the full value of sunflower seed in the diet of fowls, especially during the moulting season.

If it is handled properly, sunflower seed is one of the best things to feed the fowls while they are getting their new feathers. But care must be exercised in its use.

Young chickens do not need sunflower seed during the baby moult, and it should not be given to them, for it its apt to fill them with heavy oils and cause rheumatism. Rheumatism superinduced by feeding sunflower seed can be cured by placing the bird on a diet of chopped white clover. Feed nothing but the white clover greens until the patient recovers.

Those who have used sunflower seed with notable success during the moulting period declare it should be given to the fowls in scratch feed, the proportion advisable being about five pounds of the seed to 150 pounds of the regular scratch combination. Used judiciously, the seed braces up the constitution of the fowl as nothing else will, and makes the moulting period noticeably shorter.

Another good thing to give during the moult is a handful of sulphur mixed in the mash for 100 hens. Sulphur must be given on a dry day or it will throw the constitution of the fowl out of kilter and make it take cold. Never feed sulphur on a damp day or you may expect trouble, but if used properly the sulphur will build feathers for the fowls.

Boil one pound of flaxseed to jelly, mix it with a 50-pound ration, and feed it twice a week. A flaxseed mixture of this kind, fed according to directions, expert poultrymen claim, seems to make moulting almost a pleasure for the fowls.

During the moult or out of moult, give 20 grains of epsom salts to every hen, in the mash, twice a month. Some of the best poultry people in the southland have been using salts in the mash for years, and they are united in the belief that it is a big factor in the physical welfare of the fowls in that it keeps them stirred up and prevents torpid livers.

The wise poultryman, if not using sunflower seed now, will do well to plant a row of Russian sunflowers along the fence next year. The seed should be dropped thickly in a furrow four inches deep, and the plants thinned when they come up, until they stand at least a foot apart.

Sunflowers will grow in any soil. They require little moisture, and will raise themselves, although an occasional hoeing improves the yield immensely. Under favorable conditions each stalk should produce about half a pound of seed. Good sunflower seed now retails quite generally throughout the southwest at 10 cents a pound, so it is easy to see that sunflowers can be profitably grown for home consumption and also for market.

Steady Turkey Market

Medium-sized, but plump, turkeys are marketable all the year round, so that at any time when there is a surplus they may be sold at fair prices, but to secure the best prices they must be young and in good marketable condition, not too fat and not too large.

Lime for Chickens

Air-slaked lime, freely dusted everywhere, is cheap and will destroy lice, gapes and roup germs.

DO YOU KNOW DOLAN?

Big reduction in building supplies. Lumber 2,000,000 feet of rough lumber, $5 to $12 per M. Corrugated iron, $2.50 per square. Shingles, $1.50 per M. Roofing Paper, ½-ply, 75c; 1-ply, $1.00, 2-ply, $1.25; 3-ply, $1.50. Paints, floor, 50c per gallon; white lead, 8c per lb.; boiled linseed oil, 65c per gallon. Paints, any color, $1.50 per gallon. Window sash, sizes ranging from 2x3 to 3x3:6, and smaller, 50c each, in any quantity you want. New windows, any size, complete with frames, $2.50 to $3.50; about 20,000 in stock. New doors, any size, at 35c each. Second hand doors, complete with locks and keys, 50c to $1.00. Bath tubs, $10 to $15, complete with fixtures. Toilets, new, porcelain enameled steel, low down, $12.50. New copper lined toilets, $10.50. Second hand low down toilets, $8. New high tank toilets, $7.50; second hand high tank toilets, $5; 2-part cement wash trays, $5. White porcelain enameled wash tray combination, $8; sinks, $2; sewer pipe, 8c per foot; water pipe, 3c per foot.

Give us a call. See our stock. It will more than surprise you. The largest dealers in the building line, new or second hand. CHICAGO WRECKERS

23 Valencia Street, San Francisco, Cal.

There Is No Better Light For The Home

than the soft mellow glow of a good oil lamp. Scientists indorse it; common sense recommends it. The

Rayo Lamp

gives the ideal light for sewing and reading. Scientifically constructed. No glare. No flicker. Can be lighted without removing chimney or shade. Easy to care for.

Ask Your Dealer To Show You

Standard Oil Company
(California)
SAN FRANCISCO

Make $2000.00 more per Year

You Can Make Big Money With a well machine that makes irrigating wells fast and at a low cost. Demand for such wells is unlimited in California and the entire Southwest. The best and fastest machine for this work and this territory is the

IMPROVED POWERS COMBINED BORING AND DRILLING MACHINE

Bores thru gravel, sand and clay like a streak of lightning. If rock is struck it drills thru that. Forces casings perfectly. One man and one team can run it. You can make $1 an hour for your spare time.

Write today for catalog and EASY PAYMENT proposition.

LISLE M'F'G. CO., 427 Third St., S.F., Cal.

With the Government Scientists

SEVENTY-FIVE farmer boys and girls were the guests of President Wilson and the Secretary of Agriculture during the past month. They were prize winners in boys and girls' clubs in raising corn, potatoes, cotton, tomatoes, and for canning, cooking, and pig and baby beef raising.

Of the corn club boys, Walker Lee Dunson of Alexandria City, Ala., not only leads the country but has broken the record for corn production with 232.7 bushels from a single acre at a cost of 19.9 cents per bushel. This exceeds the previous record of 228.75 bushels at a cost of 42 cents per bushel held by Jerry Moore of South Carolina. Dunson said he found last season in Alabama a good one for corn growing and that he was able to get his phenomenal yield without the use of commercial fertilizers, but by the application of guano and a top dressing of nitrate of soda, with plenty of cultivation—seven of them.

Of the girls the leader in canning and tomato work is Miss Cyde Sullivan of Ousley, Ga., who put up 2,464 cans out of a yield of 5,354 pounds of tomatoes from 2-5 of an acre. Ralph Walker of Marlboro, Mass., is winner in market garden work for the State of Massachusetts. He had 4-10 acre under cultivation, and harvested $85.19 worth of vegetables. Elmer Parker, Elmira, N. Y., is champion of the Omeaga Club, winning his trip to Washington as a result of Poultry Club work. Miss Merle Steadman, Ames, Iowa, State champion in the Cooking Club work for Iowa, was one of the visitors. Merle Hyer of Lewiston, Utah, was the champion potato grower with 764 bushels from an acre, although in reality he only planted an eighth of an acre, but his yield was at the rate stated. The second in the potato class was William Pieree of Massachusetts, with 346 bushels to the acre.

RETURNS are beginning to be received by the Department of Agriculture from the agricultural exploring expedition sent recently to Brazil. There was received this week from the party a large consignment of citrus cuttings and seeds, some of which are likely to prove valuable. The expedition is particularly in search of citrus fruits that are likely to be worth introducing and that will be adaptable to this country.

Among some of the importations just received are varieties of orange that look as though they might be the progenitors of the navel orange of this country. This will be welcomed by the scientists, if true. The navel orange has been one of the most valuable of the introduced fruits in the United States. Owing to the long course of budding and grafting, the original strain has deteriorated in some respects and in some places. The infusion of new blood will tend to improve the strain in this country.

The exploring expedition has so far been only around Rio de Janeiro, but the members intend to start as soon as possible for Bahia and the interior. There is every prospect of their turning up many valuable things in the line of citrus fruit.

AMERICAN progress in the development of improved varieties of potatoes has not been satisfactory as compared with the progress of leading European countries, is the statement of the Bureau of Plant Industry of the Department of Agriculture.

The best European varieties possess a better flavor, color and texture, particularly for boiling and frying, but these do not succeed when introduced into the United States. If private growers would engage in this work as they have in Great Britain, Germany and Austria, they would find it a fascinating industry and would undoubtedly make notable achievements.

In America we have much to accomplish in breeding a potato with a greater starch content. Our potatoes are now lower than the German varieties by from 4 to 8 per cent.

Our climatic conditions in America are so diverse that we need varieties of potatoes adapted to special localities. Particularly do we need a heat-resistant strain that can more successfully withstand the high summer temperatures. Disease resistance is another quality that has been bred into certain foreign sorts, but is so lacking in ours that we have to quarantine absolutely certain foreign types that might bring disease with them.

The breeding of potatoes for different kinds of cooking might even be found profitable. A variety specially suited for baking is needed; another for frying; a close-textured tuber is in some demand for salads. The housewife to-day finds it necessary to waste much good material in preparing her potatoes for the table, particularly the irregular, deep-eyed sorts.

The use of commercial fertilizers universally in Germany is unknown in our Western potato districts. Certain of our districts in Maine, New York and the Atlantic trucking belt have already found it to their profit to use more fertilizer and potato growing is most prosperous in these sections. This should become more universal.

Crop rotation is of fundamental importance to the potato crop in controlling diseases and maintaining production, but in the United States only the beginning of an ordered system has been made. Germany has a rotation of from 3 to 7 years between potato crops. Nor has the importance of green manuring yet been fully appreciated in this country.

The problem of securing disease-free seed has been met in Germany by an official inspection which results in certificates being issued only to owners of disease-free crops. Such a plan for the United States would be better if carried out by the co-operation of potato growers' associations, the State experiment stations, and the U. S. Department of Agriculture, rather than through legal enactment.

THE reduction in the price of eggs, according to the specialists in the Department of Agriculture, is due more to the natural fact that the pullets have begun to lay again than to the effect of boycotts against eggs or other agitation. The pullets on the Government farm, and, in fact, throughout the country, have at last begun to lay, and already many poultry owners are reporting a fifty per cent egg production.

The fact that fresh eggs are now beginning to reach the market has necessarily reacted on the prices at which storage eggs have been held. The explanation of the particular market shortage this fall dates back to weather conditions during the spring and summer. Investigation of weather conditions shows that the spring was unusually wet and cold, which set back the laying development of the pullets; and the unusual drought in July further postponed the laying period, because both of these weather conditions affect the food supply of the pullets. As a result, the pullets that normally begin to lay in the fall have not commenced their laying until about a month later than the usual fall laying season.

Before any animals can transmit better qualities it must have those qualities.

The Heavily Laden Vineyards and Orchards

are those that have been carefully and scientifically fertilized. Statistics prove this. The modern and successful orchardist and vineyardist gives the same care and thought to food for his soil as does the prosperous dairyman to the milk-producing food he gives his cows.

And just as surely as the food that enters the stomach of a cow determines the quality and quantity of her milk (all other conditions, being equal) so surely does the fertilizer that nourishes and strengthens the soil determine the quality and quantity of its crops.

Independent of hearsay, and not taking the claims of the various fertilizer manufacturers for granted, the only way to know which is the best fertilizer to use, is to experiment.

When we claim that **Hawferco Fertilizers are best** we are simply voicing an **honest opinion. Your experiment** with Hawferco Fertilizers will **prove to you** whether or not we are competent to judge.

Send Us a Trial Order Today

HAWAIIAN FERTILIZER CO.

250 California Street San Francisco

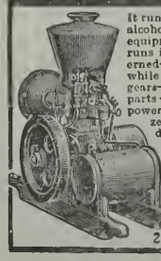
Grow **Mushrooms**

Big profits—little work, no trouble. Any one can grow them. Plant Spawn now—first crop in six weeks. You can sell more than you can grow. You always get big prices. We teach you how. Free—furnish you with the celebrated Arndt Pure Culture Spawn guaranteed to grow. Write for interesting booklet.

ARNDT MUSHROOM FARM INC.
UNION OIL BLDG. LOS ANGELES CAL.

---

20 Reasons Why You Should Investigate the **SANDOW Kerosene** Stationary ENGINE.



It runs on kerosene (coal oil), gasoline, alcohol or distillate without change of equipment—starts without cranking—runs in either direction—throttle governed—hopper cooled—speed controlled while running—no cams—no valves—no gears—no sprockets—only three moving parts—portable—light weight—great power—starts easily at 40 degrees below zero—complete, ready to run—children operate them—5-year iron-clad guarantee—15-day money-back trial. Sizes 2 to 20 H. P. Send a postal today for free catalog, which shows how Sandow will be useful to you. Our special advertising proposition saves you one-half cost of first engine sold in your county. (167)

Detroit Motor Car Supply Co.
253 Canton Ave., Detroit, Mich.

Fireproof—durable *Sold by Weight*

APOLLO ROOFING

Made from the well known APOLLO Best Bloom Galvanized Sheets, and specially adapted to all classes of farm buildings. APOLLO Roofing and Siding Products are highest quality, full weight, easily applied, and reasonable in cost. Sold by leading dealers everywhere. Send for free booklet "Better Buildings," giving plans and full information.

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.

THE FARMERS' MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Hatching Eggs and Baby Chix! Booking orders for deliveries after Jan. 10. We specialize on the white egg commercial breeds. White Leghorns Black Minorcas. For table fowl and great winter layers our R. I. Reds and Barred Rocks. Our aim is utility—well-bred, healthy stock—the kind you want for business, at prices that mean a substantial saving, based on our large output (4 000 chixs weekly) and a labor-saving practical plant. Hatching eggs $3 to $5 hundred and chixs 7c to 15c each, depending on breed, month and quantity. Circular free. **Roofden Poultry Ranch and Hatchery, Campbell, Cal.**

White Leghorn Baby Chicks from Stock selected for years by Walter Hogan's system and that for laying and vitality are unsurpassed. $10 per 100; deposit asked. Using eggs from my own stock only; output is limited. I have quality, not quantity. **Arthur King, Box 30, Route 1, San Luis Obispo.** See my "Campine" advertisement.

Campines — Silver and Golden — Improved American type only; hatching eggs; Silvers $2.50 to $5 for 15, according to pen; Golden, $5 for 15. **Arthur King, Box 30, Route 1, San Luis Obispo.** Member American Campine and Pacific Coast Campine Clubs; also White Leghorn Baby Chicks. See advertisement.

The New Spokane is a great improvement over other incubators; top lifts up; glass panels in lid; air and turn eggs in machine; hot water heated; automatic ventilation; brooder attachment to feed and water chicks without opening machine. Send for catalog. **Spokane Incubator Co., S. 429 Haven St., Spokane, Wash.**

Spring Anconas—Four yards selected stock; eggs for hatching, $1.50 and $2.00 for 15; $6 a hundred. Select pen, $3.00 for 15. Prize Partridge Rocks, eggs, $2.00 and $3.00 for 15. Black Minorcas, eggs, $1.50 for 15. **J. O. Spring, 3926 Lyon Ave., Fruitvale, Cal.**

S. C. White Leghorns—Baby chicks for sale; baby chicks, day old, $10 per hundred and $90 per thousand. Eggs for hatching, $4.50 per hundred. Cockerels and pullets, prices on application. **The Model Poultry Farm, Box L, Irvington, Cal. A. de Campos, Prop.**

FREE—66-page catalogue, describes in detail prices, etc., on 19 kinds of baby chicks, hatching eggs, incubators, brooders, etc. We ship everywhere. **The Pioneer Hatchery Co., 112 E. 8th st., Los Angeles, Cal.**

Baby Chicks and Hatching Eggs—S. C. White Leghorns, Rhode Island Reds, heavy laying strains, 100 or 1,000 Finest poultry plant in California. **Pebbleside Poultry Farm, Suanyvale, Cal.**

"Pigeons," Runts, Carneaux, Homers, Maltese, Tumblers, White Kings; thousands to select from; largest plant in West. **C. R. King, E and Spring st., Hayward, Cal.**

Petaluma Hatchery—Now booking orders for December and spring; can ship day old chicks to points reached in three days. Send for circular. **L. W. Clark, Proprietor, Petaluma, Cal.**

Hatching Eggs That Hatch—From Hoganized S. C. White Leghorns; $6 per 100; $50 per 1,000. Book early. **R. H. Dickinson, Pine Tree Poultry Farm, Los Gatos, Cal. Phone 202 J3.**

White Rocks, Mottled Anconas, Fancy Utility Eggs and Day-old Chicks coming up! This season's stock all sold. Catalogue free. **Daniels & Sons, Ideal Poultry Yards, Hoquiam, Wash.**

Your hens will keep healthy and lay more eggs if you use Young's Egg **Food and Poultry Tonic. Mix it yourself.** Results guaranteed. Formula 25 cents silver. **E. L. YOUNG, box 230, Tropico, Cal.**

Barred Plymouth Rocks—"The kind that win and lay." Eggs for hatching and stock for sale. **Chas. H. Vodden, box 693, Los Gatos, Cal.**

Bronze Turkeys and eggs; large size; good plumage; early maturity. Eggs $5 per setting, $35 per 100. (Circulars.) **Ed. Hart, Clements, Cal.**

Trap-nested S. C. White Leghorns—Cockerels, breeders, eggs and chicks. **Arthur R. Schroeder, Box 22, San Gregorio, Cal.**

Baby Chicks (White Leghorns) shipped on approval before remitting. No weak ones charged for. **Schellville Hatchery, Route 1, Sonoma, Cal.**

POULTRY—Continued.

Giant Bronze Turkeys—Toms weigh over 20 pounds at 8 months. Write for prices. **Mrs. Nellie Hart, Holtville, Cal.**

Indian Runner Ducks—6 fawn and white ducks and 1 drake, fine laying strain; for sale; $11; eggs $1.50 setting. **Mrs. Nutman, Mayfield, Cal.**

Buff Orpington Eggs—$3, $1.50 setting. Runner Duck Eggs, $1. **"Glendale," Fleming Ave., San Jose, Cal.**

Wanted—A white gobler, 9 months to year old. **Reuben Lewis, Paicines, Cal.**

If You Want Eggs get Andalusians. **Daniel Calbreath, Monmouth, Oregon.**

LIVESTOCK

Unusual offerings. Guernseys! Hampshires!—18 months Guernsey bull from H. R. dam producing 535 lbs. butter fat and an under yearling Guernsey heifer; prize winning bred gilts and young Hampshire boars of unusual merit; you want this kind of stock. **D. J. W. Henderson, First National Bank Bldg., Berkeley, Cal.**

Now Ready — Ohio Improved Chester (O. I. C.) Swine. Young boars service size. Weaned pigs, both sexes; mated; lot akin. From big, aged and tested sows and by boars of extra heavy bone. All stock crated and registered free. **C. D. Cunningham, Mills, Sacramento County, California.**

Grape Wild Farm Thoroughbreds—Guernsey bulls of A. R. Breeding. Berkshire Hogs. Finest herd in the state. All ages for sale. **A. B. Humphrey, proprietor. Mayhews, Sacramento Co., Cal.**

For Sale or Trade—Percheron Stallion; mammoth Kentucky Jack; five out of six mares on ranch in foal to Jack. Want registered Holstein or Guernseys or choice grade cows. Address **Anthony Rauch, Artesia, Cal.**

Poland Chinas at farmers' prices. The best Iowa and Missouri strains. One good brood sow bred to Long Hadley. Four gilts bred to Golden Tourist. **N. M. Lester, Gridley Cal.**

Hogs—Registered Duroc's pigs, bred gilts and boars of good Eastern and Western strains. For particulars address **Lindquist Brothers, Turlock, Cal.**

Buy a registered Jersey bull or bull calf from prize winners and producers, none better, from **N. H. Locke Co., Lockeford, Cal.**

Calves Raised Without Milk—Cost less than half as much as the milk-raised calves. Write for free book to **Coulson Co., Box O, Petaluma.**

J. W. Benolt, Route 2, Modesto, Cal—Registered Holstein bulls from large producing dams. Write for particulars.

Forest Hill Stock Farm—Duroc Jersey swine; choice young pigs and breeding stock. **John Schraeder, Gates, Ore.**

350 Big-type Mulefoot Hogs of all ages for sale. Catalogue free. **John Dunlap, Williamsport, Ohio.**

Registered Duroc Hogs, $10, at weaning time. Out of champion ancestors. **Ed. E. Johnson, Turlock, Cal.**

For Sale—Registered O. I. C. and Duroc Jersey Swine; also 2 A-1 Jersey Bulls. **Jack London, Glen Ellen, Cal.**

Registered Berkshires, $10, at weaning time. **M. D. Good, Mt. Vernon, Wash.**

Glenview Poland China stock for sale—Chas. R. Hanna, R. D. 3, Riverside, Cal

JEWELRY

Why don't you! buy your jewelry direct and eliminate the retailer's profit, thereby saving at least 50c on every dollar? We sell direct to you by mail. Write for descriptive price list. **Parish & Parish, 817 Chenery st., San Francisco.**

MUSIC

All the Late Song Hits, 15c—Seven for $1.00—When It's Apple Blossom Time in Normandy; Sailing Down Chesapeake Bay; Sunshine and Roses, Tickle the Ivories, What D'ye Mean, Lost Your Dog?; Anti-Ragtime Girl; Cross the Mason-Dixon Line. Send for catalogue listing hundreds more. We carry a teaching and classical catalogue, containing 1,600 at 10c each. Also one of 300 at 5c each. One cent extra by mail. **The Remick Song Shop, 906 Market St., San Francisco, Cal.**

PHEASANTS

Ring-Necked China Pheasants for Sale; also eggs in season. Address **T. D. Morris, Agua Caliente, Sonoma Co., Cal.**

Booklet, "How I Raise Pheasants," 20c. Prices free. **H. W. Myers, Tacoma, Wash.**

REAL ESTATE

Victoria, Australia, wants settlers—Special inducements offered by State Government, which owns lands, water, railways and free schools, excellent climate, resembles California; no extreme heat or cold, small deposit and 31½ years for purchase of lands, adapted to every kind of culture; citrus fruits, apples and pears; wheat, corn, alfalfa, sugar beets; dairying, hog raising, etc., ample markets; exceptional opportunities in irrigated districts, reduced passages for approved settlers; free particulars from **F. T. A. Fricke, Box T, 687 Market St., San Francisco.**

Fruit, Dairy, Hog and General Farming Ranch of 47 acres; river bottom of the best quality; improved with good 6-room house and barn; electric lights and telephone; plenty of water for irrigation. 7 acres orchard, 1 acre berries, 5 acres alfalfa. Price $7,000, or less for all cash. **Box 171, Anderson, Shasta Co., Cal.**

Stock and Grain Ranch—320 acres, nearly level land; 20 acres alfalfa land; all fenced; house, barn, etc.; 75 head good stock; cattle; fine outside range; price $7,000 cash; other ranches from $10 to $40 an acre. **W. Wallace Baldy, Mist, Cal., Madera County.**

Wishing a larger place I offer for sale my 40-acre prune orchard; located in the garden spot of California; no better location climate or soil. Let me tell you more. Save commission. Write **F. J. Kron, 1408 Josephine street, Berkeley, Cal.**

I will sell on 10 years' time 80 to 3,000 acres farm land in Lincoln County, Wash.; as many dollars per acre as bushels of grain grown to the acre this year. **C. W. Bethel, Harrington, Wash.**

Why not buy overlooked bargains direct from officials? Only few investigating. Land is safe and sure. Will you write for free circulars? **Joseph Clark, Sacramento.**

$15,000—650-acre income Ranch, House, Barn, Cattle, Horses, Hogs, Chickens, Tools; $7,500 cash; balance easy terms. **Sam Rex, Middletown, Cal.**

For Sale—Two acres rich, sandy loam; ½ mile from Petaluma; greatest business city West. **Mrs. A. Zeh, Gossage Road. Box 32. Petaluma, Cal.**

For Sale—Villa sites on the Blue Lakes. Address **G. A. Behrad, Midlake P. O., Cal.**

REAL ESTATE WANTED

Farms Wanted—We have direct buyers; don't pay commissions; write, describing property, naming lowest price; we help buyers locate desirable property free. **American Investment Association, 8 Palace bldg., Minneapolis, Minn.**

Wanted—Farm lands. For quick results state price and description in first letter. **Western Sales Agency, Phoenix bldg., Minneapolis, Minn.**

BUSINESS CHANCES

Free for Six Months—My special offer to introduce my magazine "Investing for Profit." It is worth $10 a copy to anyone who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how anyone, no matter how poor, CAN acquire riches. INVESTING FOR PROFIT is the only progressive financial journal published. It shows how $100 grows to $2,200. Write NOW and I'll send it six months free. **B. L. Barber, 499-20W Jackson Blvd., Chicago.**

Any intelligent person may earn good income corresponding for newspapers; experience unnecessary; send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

Go into the Cattle Business—$7,500 cash will put you in possession of fully equipped 650-acre cattle ranch Will teach buyer. Balance easy terms. **Sam Rex, Middletown, Cal.**

MACHINERY AND SUPPLIES

For Sale—Farming Machinery. One new Case 60 h. p. steam engine and new separator, 32-inch cylinder, with blower and recleaner; also two new sections of John Deere steam plow. **Box 288, Santa Ana, Cal.**

For Sale—Buffalo-Pitts 75-h. p. gas tractor (burns distillate); almost new; and four 5-disc engine plows; no better outfit made; offered cheap for quick sale; terms to responsible party. **McCline, R. 320, 62 Post st., San Francisco.**

SEEDS, PLANTS, ETC.

Trees that stand inspection—Four to six feet; apple, 8c each, pear, 20c each, $150 per 1,000. Petite, Standard, Imperial Prune, $12 per 100. Grafted Franquette Walnut, 2 to 3 feet, 50c. Write for prices on other stock. Quality guaranteed **Southern Oregon Nursery, Yoncalla, Oregon.**

We can now offer the following: Crimson W. Rhubarb, $20 per M; Conover Asparagus, $3 per M; Loganberry Tips, $18 per M; M. Blackberry Tips, $13 per M; Himalaya Tips, $13 per M, Cuthbert Raspberry Plants, $10 per M. **Currier Balh Co., Seabright, Cal.**

The 1,200-Acre Nursery—Growers of 1,500 varieties of trees and plants. **Oregon Nursery Co., Orenco, Oregon. Sales office, 523 Chamber of Commerce, Los Angeles, Cal.**

Spineless Cactus—Burbank's improved varieties of forage and fruiting cactus. Orders taken for spring 1914 delivery. Send for catalogue and price list. **Jesse I. Jewell, Santa Rosa, Cal.**

Spineless Cactus, berry, small fruit and vegetable introduction. Circular free. **Caldwell Bros., Box 613, Los Angeles, Cal.**

Berry Plants — Everything in small fruits for garden and orchard. Send to-day for price list. **Louis F. Scribner, Pasadena, Cal. R. F. D.**

Two million strawberry plants, Loganberries, blacks, gooseberries, etc. **H. A. Hyde, Watsonville Nurseryman.**

Loganberry Plants—For sale. Order at once, if you wish choice stock. **W. A. Chapman, Woodburn, Ore.**

Wanted—28,000 leaves of Burbank standard cactus in leading varieties. Address **P. O. Box 265, Santa Rosa, Cal.**

Artichokes, White French; immense yield; greatest hog feed, $2 per 100. **Shadeland Farms, Amity, Oregon.**

Clean Vetch Seed, $2.75 per hundred. **Murphy's Seed Store, Albany Ore.**

MISCELLANEOUS—FOR SALE

Symon Brothers, Wreckers—Leaders in general second-hand and new building material. With the approach of 1914, let us thank our many friends and customers throughout the country for their hearty support in the past, at the same time assuring them of an increased vigor for even better service and larger values for the new year Stock taking in our line means time and money. In order to facilitate matters from now to January 1, 1914, we will fill a car for 10 per cent less than our regular usual low prices—4,000,000 feet of new and second-hand dimension lumber—inspect our stock, satisfy yourself of its merit—second-hand lumber segregated and ripped to size—our own saws, teams and general equipment insure our customers of full satisfaction. You select your own, and our men load your car same day ordered. Doors, windows, plumbing material, electrical supplies, nails, chicken netting, ready roofing, safe, like new, cost $125; our price $45; shingles, corrugated iron, building paper, blue plaster board; whatever you need we have—yards overstocked. Remember, SPECIAL OFFER in car lots—buy where stock, service and general satisfaction are assured. Again expressing our gratitude for past support, and wishing one and all a Merry Christmas, with a bright, prosperous and successful New Year, we remain at the old land marks—the sign of quality and economy. **11th and Market sts., Opp. Van Ness ave., and 1679 Market st., S. F. Dept. 3.**

Second-Hand Pipe—Largest dealers in standard pipe and screw casings; prices right; guaranteed first-class. **Pacific Pipe Co., Main and Howard sts.**

Canaries for presents—Fine canaries for sale. **Mrs. M. J. Wood, R. F. D. 5. Box 102, Santa Rosa, Cal.**

BUSINESS PERSONALS

Patent, architectural, mechanical illustration drawing; blueprinting, tracing, mapping, perspectives. Write the **San Jose Drafting Co., 108 Ryland Bldg., San Jose, Cal.**

If you covet an Ideal California Home, don't miss OUR CALIFORNIA HOME weekly. Not selling land. $1 a year **D. L. Beckwith, Santa Margarita, Cal.**

BEES AND HONEY

For Sale—Italian bees. For prices address **Mr. Painter, Corte Madera, Cal.**

Additional Farmers' Market Place advertisements will be found on Page 27.

Farmers' Market Place

TREES

Choice lot Italian prune trees, 4 to 6 feet, $6 per 100; 1-year-old apple trees, first-class stock, 4 to 6 feet, $5 per 100; full line of nursery stock at equally low prices; catalog and price list on request. **Wirt Nursery Motavilla, Ore.**

Good Line Nursery Stock—Prunings, all kinds, 10 per cent under market. **Farmers' Nursery, Sebastopol Cal.**

RABBITS

Thoroughbred Belgian Angora, New Zealand and Flemish Rabbits—1913 winners of 16 firsts, specials and cash prizes. Catalogue free. **Caldwell Bros., Los Angeles, Cal., San Fernando Boulevard.**

Wanted—Jack Rabbits for the market. **J. R. D., 404 28th ave., San Francisco.**

HELP WANTED

Story Writers Wanted—Make money writing short stories. Big pay; pleasant work for you. Send for free booklet; tells how. **United Press Syndicate, San Francisco.**

EMPLOYMENT AGENCIES

Write, Telephone or Wire us for farm and dairy hands; help furnished without cost to you. **Hanley Employment Agency, phone Main 727, A2290, 28¾ North Second st., Portland, Ore.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

FROGS

Frogs—Investigate breeding big Eastern bullfrogs; unusual possibilities west of mountains. Tremendous demand. **Aquaco, Seymour, Conn.**

PATENT ATTORNEYS

Dewey, Strong & Co. (Est. 1866)—Patents, trademarks, inventors' guide, 100 mech. movements free. **911-916 Crocker bldg., S. F.**

DOGS

Airedale Terriers—High quality; puppies and grown stock; from $10. **Dromore Kennels, Vallejo, Cal.**

EDUCATIONAL

Van der Naillen's All Engineering School; estab. 1864. **51st and Telegraph Ave., Oakland, Cal.**

AGENTS WANTED

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695 Lockport, N. Y.**

NOVELTIES

Swiss Warbler's Bird Call — Imitates any bird or animal perfectly; hunter's friend; boy's delight. 10c postpaid. **Hilliard, 652 Dora, Ala.**

Feeding Fowls

Fowls should have empty crops in the morning, and the crops should never be quite full until it is time to go to roost at night. For the first feed, grain scattered in the litter early in the morning is preferred, the sooner the better after the birds leave the roosts.

This induces them to exercise, which is especially important on cold mornings. In the middle of the day a warm, moistened mash should be given, about what they will eat within fifteen or twenty minutes, and at night, about an hour before they go to roost a liberal feed of grain should be scattered in the litter.

Ducks and Disease

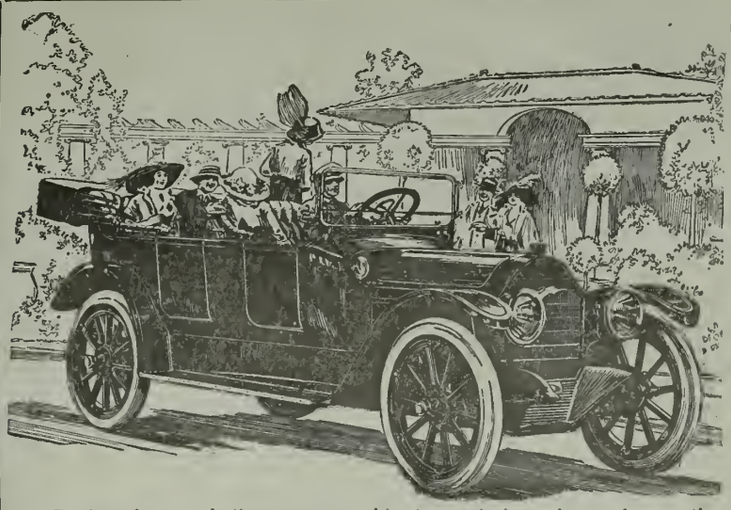
Ducks are not easy subjects to disease. Cramps occur sometimes from cold water, and apoplexy afflicts the overfat specimens. A cold and wet duckling is likely to go into spasms. If the quarters are damp at night the ducklings are liable to leg weakness.

Fattening Cattle

LAST year when Glencarnock Victor, a Manitoba grade Angus steer, carried off the coveted grand championship award at the International Live Stock Show in Chicago and finished his triumphant career by dressing out 70.9 per cent of the finest beef ever seen, without ever having tasted a grain of corn, experienced feeders and breeders said it was not in the feed and it was not in the breed, but was just one of those things that happen once in a while. They also said, just wait till next year and see the corn belt win. This year Mr. McGregor of Manitoba, owner of last year's champion, again swooped down from the Dominion and carried away the championship. Glencarnock Victor 2d, this year's most popular championship winner, was a half brother of the former winner. Again the cornless menu produced the winner. Victor 2d's feed consisted of boiled barley and oat chops, turnips, beets, a little oil meal and prairie hay for roughage. He was fed and cared for by a 17-year-old boy. The car lot champions were also Angus yearlings and were fed along the same line—a varied ration that would cause the animals to drink as much water as possible.

The Herefords were, as usual, well represented. Pure bred Herefords, belonging to James Price of Wisconsin, won the herd championship. W. J. Davis of Jackson, Mississippi, won on champion bull.

As in last year's awards the fact of most vital interest to California breeders and feeders is that corn is not absolutely essential to the production of championship beef. Barley, the best substitute for corn, when mixed with oats, oat hay, alfalfa, turnips, beets, oil cake, or molasses, makes excellent feed and causes more water to be consumed. It has been found that the more water an animal drinks the better and more evenly the fat is distributed.



Don't ask us whether we use this transmission, that axle, or the other clutch; we don't. Every vital part of the

Famous Apperson "Jack Rabbit"

"THE WIZARD OF THE HILLS"

is designed and made and the car assembled, tested and proved in the complete factories of the Apperson Brothers at Kokomo, Indiana. We shift no responsibility to the parts maker.

PRICES AND MODELS F. O. B. KOKOMO

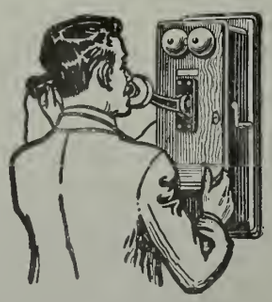
All with electric lights, starter and full equipment.

Light Four Forty-Five	Touring for five	**$1600**
	Roadster for two	**$1600**
	Inside drive coupe or town car for four	**$2350**
Four Forty-Five	Touring for five	**$1750**
	Sedan Limousine	**$2500**
Six Forty-Five---Fifty-Eight	Touring for five	**$2200**
	Roadster for two	**$2200**

Apperson Bros. Automobile Co.

305 Main Street, Kokomo, Indiana

PORTLAND 58 North 23d St. — CHICAGO 3300 Indiana Ave. — SEATTLE 907 E. Pike St.



You just talk naturally with a Western Electric Rural Telephone—just as if the party on the other end of the line was right near you. No need to yell. No need to repeat what you have to say. It's a real pleasure to talk to folks with a Western Electric Telephone.

Can You Hear Distinctly On Your Telephone?

Can you understand every word when you put the receiver to your ear? Do you have to shout when you answer back? Does the person on the other end of the line sound faint and far away? If so, quite likely it's the fault of the telephone—and it's all unnecessary. You can hear distinctly and be heard distinctly if you will put in a

Western · Electric
Rural Telephone

It is standard "Bell" equipment, the standard by which other telephones are judged.

The largest telephone manufacturers in the world guarantee that these instruments will give you full money's worth and entire satisfaction. Thousands in daily use among progressive farmers in your State and in adjoining States.

Before you replace your old telephone write to our nearest office for a copy of our new, illustrated book on rural telephones. It is useful to every farmer. Ask for book No. 95.

WESTERN ELECTRIC COMPANY

Manufacturers of the 7,500,000 "Bell" Telephones

New York, Buffalo, Philadelphia, Boston, New Orleans — Atlanta, Richmond, Savannah, Cincinnati — Chicago, Milwaukee, Pittsburgh, Cleveland — St. Louis, Indianapolis, Minneapolis, St. Paul — Kansas City, Oklahoma City, Dallas, Houston — Denver, Omaha, Salt Lake City, Los Angeles — San Francisco, Oakland, Seattle, Portland

EQUIPMENT FOR EVERY ELECTRICAL NEED

Pay of the Average Farm

By G. W. Shaw

THE average farm does not pay. This is as true in California as it is in the other States. The average yield of wheat in the United States is but 15 bushels per acre, while the average yield of corn is but 25.9 bushels. Alfalfa is the most important irrigated general farm crop and the average yield per acre on irrigated land for the entire United States in 1909 as reported by the last census, was 2.94 tons for irrigated land, and 2.14 tons per acre for unirrigated land. When we remember that half of the farmers who grow these crops produce less than the averages above stated, it is quite easy to see that the average farm does not pay. Frequently we find two farmers side by side on land of essentially equal value and natural fertility, one of whom barely ekes out a poor living, while the other makes good money. Usually a little investigation will show that the essential difference in the farm management practiced by the two men—one we say is a good manager and the other a poor manager. There are a large number of the latter class who might be transferred into the first class if they would give more heed to the more modern methods. Let us examine some of the factors which constitute the elements of successful farm management.

In the first place, a well-planned rotation of crops is essential. The average farmer frequently grows the same crop year after year upon the same land, until the land is seriously reduced in productivity, badly infested with weeds, and the soil becomes filled with insect pests and fungous diseases which prey upon the crops and reduce their yield. Again, one year he may have tweny acres of corn and another year sixty acres. With such irregular arrangement he often finds himself short of help at critical periods in the life of the crop, and with nothing to do at other times. Work upon the farm should be so planned that there is something profitable to do every day in the year. Work that can be done inside in wet weather should be saved up for such weather and the general work so planned that the farmer will never be caught napping and thus required to do a lot of work that could be done just as well at other times than when the main work of the farm is pressing. A well-planned rotation of crops enables the farmer to plan a much more effective arrangement with his labor, to employ well selected men throughout the year rather than hiring several men for short periods and thus having to deal with migratory help, which is one of the greatest drawbacks of operating a ranch. Further it utilizes the full possibilities of the soil; it keeps the fields busy growing something all the time. If but one crop is grown, the soil is usually left bare during a part of the year. This is poor farming, except when the land is purposely fallowed. No ground should be idle when it might be growing a crop, either to sell or turn under as a fertilizer. The busier a soil is kept, provided the right kind of crops are chosen, and provision is made for green-manuring, the more productive it should become. As land becomes more expensive the force of this is greatly increased. The practice of rotation easier upon the soil than when a single crop is grown, even though the rotation be an annual one and simply from one type of grain to another each season. This results from a different feeding habit of the plants. Every farmer knows that some crops are "harder upon the soil" than others, and the chemist also tells us that some plants use more plant food than others. Different plants, however, take from the soil, not different kinds of plant food, as many suppose, but different amounts of the same plant foods. Thus, wheat needs more phosphoric acid and more potash than fruits. Oats require more potash than corn. If a soil be cropped continuously with wheat it is likely to exhaust it sooner of the avilable plant food than if some other crops were grown in rotation with the wheat crop. The producing power of a soil is measured by the amount of the essential plant food which is the least abundant. A rotation of crops does not subject the soil to a continuous drain of plant foods in the same proportion; it changes the proportion of the plant foods and so makes the soil go farther.

Another reason why crop rotation is easier upon the soil is because plants have different rooting habits. Some plants root comparatively near the surface, while others draw their food supply from the deeper portions of the soil. For instance, the small grains root more shallowly than alfalfa or clover. The long tap roots of the latter penetrate deep into the soil and gather a large amount of plant food from greater depths than the small grains. Corn roots deeper than oats. Mangels and sugar beets root deeper than the round turnips. This fact allows the farmer to take advantage of the under-soil as well as the top soil. But the methods followed by many farmers, especially exclusive grain growers, make one wonder whether they know that they own more than three or four inches deep, since they are so careful never to touch the deeper layers at all. A soil may be nearly exhausted of plant food near the surface and still contain much for deep rooting crops. The fertility of a soil is thus conserved by rotating crops upon it which not only differ in their soil drain but also in the relative area which they place under tribute.

In addition to the above there are many other advantages arising from a well planned rotation, among which may be mentioned the elimination of weeds, the improvement of soil texture, the lessening of insect and disease attacks, and the increase of yields. Hence we insist that the most fundamental factor in increasing the returns for the average farm is a well planned rotation of crops.

A New Cotton

D. A. Wheeler, who ranches near Holtville, has brought to the front a new kind of cotton of the Durango variety, which he has named "Summer Cluster." The cotton came up on his ranch two years ago—three and one-half pounds of it. He sent it to the Department of Agriculture, where it was ginned, the seed being returned to him.

From that seed, in 1913, Mr. Wheeler grew fourteen rows—less than a quarter acre—of the new variety, but the harvest was nearly three-quarters of a bale. The plants were very strong and thrifty, many of them reaching a height of six and seven feet, and carrying from 400 to 500 bolls each. The fibre seems to be exceedingly strong and fine.

Tepary Beans

Charles Edmunds, a Coachella valley ranchman, has been having some interesting experience with tepary beans. This bean is a new thing in southern California, but it is a strong, heavy grower, and Horticultural Commissioner Cundiff of Riverside county is inclined to believe that the tepary bean is destined to become a fine cover crop plant down in the Colorado river country. Quite a number of ranchmen around Thermal will give the bean a trial this year.

The Children's Health-Beverage

Because it combines the elements which growing children require, because it is a palatable food drink which every child enjoys.

Ghirardelli's Ground Chocolate

is almost universally used by discriminating mothers. There is strength, satisfaction and radiant health in every cupful of this incomparable beverage.

D. GHIRARDELLI CO.
San Francisco
Since 1852
"The beverage for every age."

Prove its goodness. Send for a sample can—mailed free.

DON'T BE DEFRAUDED -GET THE GENUINE

The great popularity and the heavy demand for the famous Martha Washington Comfort Shoes made only by the F. Mayer Boot & Shoe Co. of Milwaukee, have caused dishonest dealers to sell cheap and inferior imitations to their customers when the genuine Martha Washington was wanted and asked for.

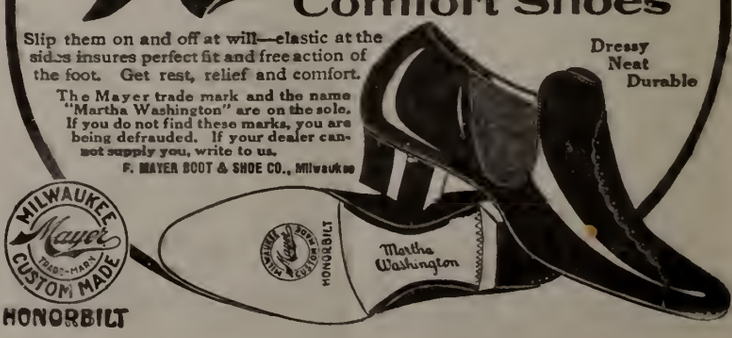
Mayer Martha Washington Comfort Shoes

Slip them on and off at will—elastic at the sides insures perfect fit and free action of the foot. Get rest, relief and comfort.

Dressy Neat Durable

The Mayer trade mark and the name "Martha Washington" are on the sole. If you do not find these marks, you are being defrauded. If your dealer cannot supply you, write to us.

F. MAYER BOOT & SHOE CO., Milwaukee



The Kitchen---An Efficient Workshop

By Mary B. Vail, Head of the Department of Home Economics at Mills College

Miss Mary B. Vail's articles on practical household economics are of real service to farm women. This is the fourth of a series of articles on simplified processes to lessen the extravagant waste of the time and energy of the worker in the farm home. The fifth article will appear in the February issue.

IN all departments of life we are trying to standardize methods and expediture of effort; to set a limit to our production, to learn what results we have a right to expect. Business is being standardized every day, and the results are reduced cost and increased production. Why not apply these principles of standardization to housekeeping as well as to the manufacture of shoes, furniture and automobiles? The result for which all are working is efficiency; and standardization is the only sure way of securing efficiency. To begin with, shorten distances, simplify processes, lessen the extravagant waste of the time and energy of the worker in the kitchen, which is the working center of the house, and thus save the money of the provider. Nine-tenths of the spending for the family is done today by the housewife, yet the managing and directing of a household falls too often upon an untrained housekeeper. Self-made housekeepers would apply their energy to better advantage if, like self-made business men, they would use the results of experts and the conclusions of investigators whose business it is to find the shortest, best path from cause to desired effect.

After planning the convenient arrangement of rooms in the working end of the house, let us put in order the central workshop, the kitchen. The first important element is light. In the case of a factory, if light were necessary to good results the whole side of the building might be of glass. Why not have a light kitchen? If we are limited to one window, let us select the process requiring most light and do it in front of that window; let other work take second place. If we have two light windows, we will center about one the fixtures that stand for cleanliness, and about the other the furniture that is used in the preparation of food.

There seems to be two kinds of work done in a kitchen; one relating to food, its preparation and cooking, the other relating chiefly to the cleansing of the dishes and utensils used in cooking and serving food. The dishes are used or stored, in or near the dining-room; this would indicate that the cleansing group should be near the dining-room or pantry, and, if possible, connected with it by a pass slide. The food group should be close to the food supplies in cool closet or ice box, and should include a pastry table, shelves for supplies, and a stove. A corner devoted to the food group is quite as satisfactory as a pantry set apart for it, if the corner can be kept reasonably cool. To save steps the cool closet or refrigerator should be the first of the series of furniture that has to do with food; then follows the table with its accompaniment of shelves and supplies; and, lastly, the stove. If the ice box must stand in the kitchen, put it far from the range and, if possible, have it filled from the outside. Plan to have all utensils and supplies within reach; that is, all shelves should be at or above the level of the table. Below the level of the table, cloths, linen and things seldom used, may be stored in cupboards and drawers. Do not bend or lift if you can help it.

The pastry table with its drawers, cupboards and molding boards is often well arranged and economical, but an ordinary kitchen table can be the center of a group quite as convenient. Insist on the table being the right height for the worker to use with least expenditure of effort. You should not lean forward to work nor should you lift your arms. There is a table level that is right for you; how many inches below your elbow is it? Is it three and a half or four inches below when standing? Each one must determine the varying height according to convenience. The best wooden table top is of close-grained, hard wood, but is rarely to be found; if it is covered with white oil cloth it is attractive and easily kept clean. A heavy sheet of clear glass makes an ideal table top. Cards with recipes on them may be slipped under the glass and thus kept clean. A molding board will not slip across the table when in use if it is furnished with a cleat to catch on the front edge of the table. On a shelf just below the table top store the molding board, and wrapping or news paper with which to cover the table when dirty work is to be done.

Within reach as you stand at the table the supplies should be found on a set of three or four shelves not more than four inches wide and eight inches apart. Glass cans of quart or pint capacity will answer admirably as containers and you will not need to raise the lid to learn what or how much is within. Small screw top jars will serve for spices, etc. Under the shelves a row of right angled screw hooks or nails will hold the articles that are frequently used in mixing, such as cups, egg-heaters, etc. The order once established should be maintained. In the table drawer, separated by strips of wood, should be spoons, etc., that cannot be hung. Sharp knives should never be stored with other things in a drawer, but may be held by a leather strap on wall or cupboard. Receptables for flour, sugar, etc., may be near on shelves or in tin-lined bins, but they should never be so large, low or clumsy that one cannot manage them easily.

Since it is a constant strain on the muscles to stand, and of no advantage, but rather wasteful of energy, a stool in the kitchen is necessary. It should be from twenty-four to thirty inches high, according to the height of the worker. It should be used not alone when one is mixing, but when ironing, washing dishes; in fact, when doing any work that does not require steps.

Next to the mixing table should come the range, whether of electricity, gas, gasoline, kerosene or wood and coal. If the last, the range should be the best to be bought; not the old-fashioned castiron one that heats the kitchen as much as the oven, nor the decorated nickel-plated one which is so hard to keep bright and clean; but the steel or malleable iron range with fire box apportioned to oven space and an interlining between oven box and the outside of the range. The fire box should have a water front that heats the water in a tank near by; this, of course, depends on available water pressure. The range should always have the benefit of both window and artificial light. To work in the dark or in your own shadow is a mistake. If the sink is far away a faucet over the stove would save many a step. A shelf near the range is quite indispensable; it should hold salt, pepper, a measuring cup, fork, big spoon, etc., as well as coffee and the coffee pot. Above the range an opening into a ventilating flue, not the kitchen chimney, would carry off heat and odors, and a hood over the range would help to keep the air of the kitchen cool and clean. The box for wood or coal might be in the wall and be filled from the outside. The pots and pans should be hung on the wall near the stove, as in a Dutch kitchen, or from hooks over the stove, as in a chef's kitchen. A sheet of zinc on the wall will protect it from fire, and be easy to keep clean.

We must not overlook that important group of fixtures devoted to cleanliness of which the sink is the center. Many contractors to-day are making sink and laundry tubs of cement, but nothing has yet been found better than enamel, either on iron or crockery. If possible, the wall above the sink about the faucets, the drainboard at either side, and the rim of the sink should be of one piece with the sink. It simplifies work to have no wood to absorb water or dirt, and no cracks to clean. The height of the sink should be adjusted to the person using it; and not decided by the plumber. One should not need to bend forward to do work, nor to double down to find and lift materials and utensils. Perhaps the bottom of the sink should be on a level with the mixing table. A sink would serve its purpose better if it were deep enough and wide enough to hold a dishpan, and long enough to hold two dishpans if desired. Grooved drainboards, usually of wood, should slant from the shelf or table to the sink.

A problem in efficiency is suggested by what has just been said; if the sink is before the window and you are right-handed, would it not be easier to put the soiled dishes on the table to the right, and the clean ones, after washing, on the drainboard to the left? Also would it not be wise to have the table holding clean dishes near the closet or shelves to which they must be taken and from which they must go to the dining table? Notice your method of washing dishes, notice how many minutes it takes from start to finish. Could you make the process easier, the time shorter, by rearranging the kitchen furniture? Could you standardize your work? Take out of it the unnecessary motions, the minutes wasted for lack of thought and planning, the element of drudgery? The last word on washing dishes must be postponed until a later article.

The sink should be supported from the wall rather than from the floor, and one or both drainboards, or shelves, might be hinged to fold up or down against the wall when not in use; or an extra table might be stored under the shelf near the sink; a small table about 20 by 25 inches, covered with zinc on small wheels rather than casters. Its capacity should be doubled if it had a shelf underneath and hooks about the sides. Its value is that it will hold hot things near the stove, that it may be rolled with them into the dining-room, and later will stand near the hostess to relieve the dining table of soiled dishes. The table can easily be made at home and is an invaluable addition to the kitchen furniture.

Since we have our small, nearly square, kitchen furnished and equipped, let us peep into it from the dining-room. The walls are light and warm in color, the utensils are harmonious and orderly as they hang on the wall, the doors are few in number, and the windows are many and not less than forty inches from the floor, which provides for working space under them. The group of fixtures that stands for cleanliness is near the dining-room, the group that is used for foods is between the ice box and the stove, and the table on wheels, called a wagon, travels between them.

It looks like a convenient workshop; and if we have studied motions, counted steps, and simplified processes, we have gone a long way toward standardizing work in the kitchen, toward producing efficient workwomen, and toward proving that economy of time and energy is quite as vital as economy of money.

There are two classes of poor people—those who want you to give them money and those who want you to give them a chance.

Young Wife—That pudding I have just made for you is a poem.

Hubby—And I suppose I'm to be the waste basket.

Every man in a brass band thinks his horn makes the best music.

The Household Exchange

EACH month "Orchard and Farm" will give prizes for the best household hints received.

As a special feature the suggestions for February issue may embrace anything in the way of household sewing, new or of practical value to farm women.

Have you any particularly satisfactory method of purchasing material, cutting, fitting, finishing, pressing or trimming garments; designing or making over children's clothes; anything new in the way of making tablecloths or napkins, curtains, cushions or table covers, or embroidery or the like?

The following rules must be observed, or no attention will be paid to the suggestions:

Suggestions must not contain more than 150 words.

Not more than two suggestions a month may be sent by one person.

Competitors must write on one side of the paper only.

Do not send a letter with your suggestions. The suggestion itself is enough.

The editor reserves the right to publish any suggestions whether or not they win a prize.

This contest is not confined to California alone, but is open to women living in any Western State. Address all suggestions to Virginia Kirtley, Household Editor, care of "Orchard and Farm," Hearst Building, San Francisco, Cal.

FOLLOWING are the prize winners this month in the Household Help contest and the prizes awarded them:

Mrs. A. T. Pannell, R. F. D. No. 3, Santa Rosa, Cal.; twenty-six piece silver set ----------$8.00

Mrs. Mary C. Friel, Lovelock, Nev.; set of six silver tablespoons and six teaspoons ----------$4.00

Mrs. B. J. Jackson, Alvarado, Cal.; set of six silver knives and forks ----------$3.50

Agnes C. Gross, 132 South Tenth street, San Jose, Cal.; handsome silver handled silk umbrella----$2.50

M. E. Stokes, 25 Lee street, Santa Cruz, Cal.; silver sugar shell and butter knife----------$2.00

Following are the prize winning suggestions:

For a New Tank.

Recently we put up a new redwood water tank and supposed we would have to wait some time for the water to become clear and lose the "woody" taste. The following "hint" saved all waiting: Before turning water into the tank we "painted" the whole inside with a thin coating of paraffine. The painter was kept supplied with melted paraffine in small quantities, and it was a much less difficult task than it sounds. It not made only the water fit for immediate use, but filled all crevices so the tank never leaked a drop. A dollar's worth of paraffine (not the extra refined) painted a 5,000 gallon tank.—MRS. A. T. PANNELL.

Uses for Unbleached Muslin.

Many housewives in homes where the pennies must do their full duty have overlooked the possibilities concealed in a bolt of unbleached muslin. The uses are legion.

Curtains for bedroom or kitchen, either sash or full length, with plain hems or simple feather stitching, in old blue or gold mercerized thread, are dainty and serviceable.

Dresser covers and centerpieces with featherstitched hems and crocheted edges in colors to match the other furnishings are easily and quickly made and have a beauty out of all proportion to their lowly origin.

Two widths sewed together with a felled seam and finished with a two-inch hem all around make a tablecloth for everyday use not to be despised.

House dresses made of the creamy stuff with collar and cuffs of a favorite contrasting color are charming, and repeated visits to the laundry bleaching them to snowy whiteness render them no less attractive.

The small boys' Russian suits with trimming bands of gingham are serviceable and pretty. — MARY C. FRIEL.

Prune Sweet Pickles.

Cook dry prunes until done, in as little water as possible. Take vinegar, sugar and spices and heat, put prunes into same and leave on stove to simmer for an hour. If you use one quart of prunes use one pint vinegar, one-half pound of sugar, or more if you prefer them very sweet. You will find them very nice with meats and game.—MRS. B. J. JACKSON.

To Dry Knitted Garments.

Wash article in warm suds and rinse thoroughly. Take dishpan, line with clean towel and put garment in pan and place in warm oven. Turn and shake occasionally. When dry the article will be as light and fluffy as new, and will keep its shape much better than when dried on the line.—AGNES C. GROSS.

Eggs on Toast.

In a shallow pan melt one tablespoonful of butter, add half a cup of cream, break six eggs (or the number wanted) into the hot cream. Sprinkle with salt, and, if liked, grated cheese. Cover and let stand until "set." Serve on buttered toast, pouring surplus cream around.—M. E. STOKES.

Little Hints for the Home

Canned Mince Meat—Mince meat for pies can be preserved for years if canned the same as fruit while hot and put in glass jars and sealed perfectly tight, then set in a cool, dark place. One quart jar will hold enough to make two ordinary sized pies. In this way mince pies may be had in the middle of summer as well as in winter. If the cans are sealed properly, the meat will be as fine when opened as when first canned.—MRS. THOMAS RENCK, box 407, Tulare, Cal.

To Renovate Velvet—Heat flatiron quite hot, cover with wet cloth and rest upside down between two other irons. Then take velvet and pass slowly over the steaming cloth.—MISS NORAH ROSE, Clayton, Cal.

For Preserving Old Blankets—When a woolen blanket becomes old and worn, take cheesecloth, either white or colored, and cover both sides, tacking as for a comfort. An old blanket covered in this way makes a nice warm, yet light and inexpensive covering. Try it.—MISS LIZZIE POWELL, Lakeport, Cal.

To Prevent Plackets From Tearing—Sew a small hook and eye at the lower end of the placket opening in dress skirts and bend hook down so it will not come unhooked and there will be no more trouble with torn down blackets.—MRS. MARY L. NEMAN, Mountain View, Cal.

If a fork is wrapped with clean cloth and dipped in grease it will be more satisfactory to grease the waffle iron than pouring grease into it, as it allows every hollow to take up some grease.—MRS. D. M. McPHERSON, Amboy, Cal.

Unusual Credit

BUY YOUR FURNITURE AT YOUR OWN TERMS
NO MATTER WHERE YOU LIVE
Friedman's Will Trust You Without Seeing You

You can buy what you want and pay later in small monthly sums. We will trust you for anything you need and give you

A YEAR TO PAY—30 DAYS' FREE TRIAL IN YOUR OWN HOME.

No Security—No Mortgage—No Notes—No Interest—No Collectors to Worry You.

SEND FOR FREE CATALOGUE

2,000 Credit Bargains in Up-to-date Furniture, Carpets, Rugs, Draperies, Stoves, Bedding, Silverware, etc.

CREDIT ACCOUNTS OPENED ANYWHERE

M. Friedman & Co.
San Francisco, Cal.
Dept. O.F., 261 Post St.

EASIEST LONG TIME PAYMENTS

Perfect Coffee Means More Than Excellent Raw Material—It Must Include Perfect Handling, Perfect Roasting, Packing and Grinding and Perfect Means of Selling to Insure the Shortest Possible Time Between Buyer and Seller in Order to Have a Perfect Cup of Coffee.

The above is my belief, and in brief the policy back of every pound of Coffee from the Caswell Importing House.

I personally "cup-test" all our coffees to insure quality and uniformity.

Last month in this paper I spoke of the importance of Freshly Roasted Coffee—probably the most important single quality that good Coffee must have. I repeat again that Coffee to be good must be freshly roasted when delivered to you. True, it must also be more than that. For instance, we could buy raw Coffee Beans of second and third grade, and with our fresh-roast facilities make from it a Coffee that might pass your inspection and you might willingly pay a first-class price for it—but you would sooner or later find out the truth and I would lose a customer. Therefore, I buy only the best American Cup Tested Coffees (90 per cent of the Coffees grown in the world are produced in South and Central America) from growers whose product I know is of top quality. That gives the foundation for Perfect Coffee.

Then, in the matter of roasting—you might accept stale roast Coffee until you learned better—but I forestall that by selling Coffee only on the day it is roasted and I have never known a customer to leave my fresh roast Coffee for a stale Coffee. Coffee that is not freshly roasted cannot make a Perfect cup of Coffee.

Also the process of grinding might escape your attention to such an extent that you would not think to notice its importance, but in the end you would learn. You know a small piece of meat boils through and is "done" quicker than a big piece, and for that reason a big and a little piece are not boiled together for perfect results because the little is way over-done by the time the big piece is about right. It is the same with Coffee—big and little pieces mixed together cannot make Perfect Coffee (the little pieces get over-done and bitter by the time the big ones are about right). For this reason all our Coffees are cut in scientifically true steel grinders and sorters that make it impossible for mixed sizes to be packed together. Open a can of **Caswell's National Crest Brand** and the first thing you notice after the fine fresh aroma is the surprising uniformity of the ground pieces. They all look alike. That's what insures absolute evenness of boiling in the Coffee pot. For all these good and proven reasons **Caswell's Coffee** deserves a place in the best homes. And lastly, it is so easy for you to get Caswell's Fresh Roast Coffee delivered right to your door. We supply you direct either through our local agency nearest you or by Uncle Sam's Parcel Post. Either way makes sure that you are getting only **Fresh** Coffee.

San Francisco is a most important coffee port.

I recommend **Caswell's National Crest Brand** for its excellence for home use. It comes in trial 5-pound cans at $2.00 delivered free, and medium cans, 2½ pounds at $1.10 delivered free. I'm sure a trial will win you as a customer by the excellence of the goods. Then you can arrange, if you wish, to be supplied regularly as you need it. Simply enclose your check or money order for proper amount and you will be immediately supplied.

Yours for Perfect Coffee,

Geo. W. Caswell

PRESIDENT

Geo. W. Caswell Co.,
530-532-534 Folsom Street,
San Francisco, California.
Also Dealers in Teas, Spices, Extracts and Baking Powders.

KOVERALL NIGHTIES

The new hygienic sleeping garments for little folks, one to eight years

They button up the front

On and off as easy as a coat. Boys and girls old enough to play can pnt them on without help — and love to do so. They are so comfortable and so pretty, the children hate to take them off—always want to keep them on for breakfast. Made large and roomy — plenty of kicking and twisting room, yet they won't slip up and leave the restless little limbs cold and bare, if covers are kicked off.

Koverall Nighties are made of soft fleecy materials, in all white and with the most fascinating kindergarten designs in colors, also of fine mercerized cloths, in white, light blue and champagne, and of plain white drills. Button in front, drop back, high neck, long sleeves and pocket.

Awarded Gold Medal, Mechanics' Fair 1913

Koverall Nighties sell for 75c each

A New Suit FREE If it Rips

Look for this red woven label on neck of each garment

KOVERALL NIGHTIES

TRADE MARK

LEVI STRAUSS & CO. SAN FRANCISCO, CAL.

If your dealer cannot supply, we will send them charges prepaid, on receipt of price

Levi Strauss & Co.
Manufacturers
San Francisco

98 cents

5 YEAR GUARANTEE

Railroad Watch

To advertise our business, make new friends and introduce our catalogue of Watches we will send this elegant Railroad watch by mail post paid for ONLY 98 CENTS. Gentlemen's size, full nickel silver plated case, locomotive on dial, lever escapement, stem wind and stem set, a perfect timekeeper and fully guaranteed for 5 years. Send this advertisement to us with 98 CENTS and watch will be sent by return mail post paid. Satisfaction guaranteed or money refunded. Send 98c today. Address R. E. CHALMERS & CO., 538 So. Dearborn St., Chicago.

When answering advertisements, please mention "Orchard and Farm."

Happy Marriages

—By Ella Wheeler Wilcox—

IN the first glamor and rapture of possesion, betrothed lovers and newly married people are immune from the influence of any third person. The most fascinating woman, the most attractive man, is powerless to awaken more than a passing platonic interest in husband or wife.

Very young lovers believe this condition will prove eternal, and when it diminishes in any degree—when either one becomes in the least susceptible to the physical or mental charms of another—they imagine they have reached a crisis of misfortune, and that wedded love is dead or dying.

Instead, they should regard it as the mere rise and fall of the emotional tides. When the sea is at high-water mark, all the pebbles and rocks on the coast are covered; when it ebbs they are revealed, but the tide comes back and covers them again.

The mistake lies in supposing that it is gone forever and is rushing forth to seek a new sensation elsewhere, and if found elsewhere, to suppose it means "affinity."

Were I the mother of a young daughter about to be the wife of a man she adored, I should say to her: "Do not imagine that you will never feel the attraction of any other man when you are married. If you are in perfect health and if your mind is receptive and progressive you will, as the years pass by, find yourself interested in, and stirred by other magnetic masculine personalities. When such an experience comes, give it as little thought as possible. It does not mean that you have ceased to love your husband, nor that you have found one who could hold your interest longer than he. It means that you chanced to be susceptible to an electric current which can vitalize and strengthen you if made to act upon you mentally, or can be turned into a live wire and bring destruction if you choose to make it so."

To a son I should speak in precisely the same manner, perhaps oftener and with more earnestness—not because men are more tempted than women from within or without, but because they have been allowed so long to believe in their privilege to play with temptation.

It is useless to deny the fact that life offers no other fascination equal to the attraction of the sexes. It is not strange when we realize that the entire earth is formed and maintained—the vegetable as well as the animal kingdom—by the sex impulse. The only strange thing is that human beings in this advanced and scientific age consider it a subject to be avoided or a fact to be denied.

The woman who proclaims herself absolutely indifferent to men proclaims herself either hopelessly phlegmatic or anaemic. She is not normal; neither is the man who cares nothing for—and finds nothing fascinating in—the association of women.

Wise is the wife who says to herself: "My husband will see many women who charm and interest him, but he shall be so loved, entertained and trusted by me that he will not want to wander away."

Wise is the husband who says: "My wife will attract and be attracted by other men, no doubt; but she is loyal and true, and I shall give her such attention and devotion she will not wish herself the wife of any other man."

That there are many such marriages I know, for I again assert that, despite all the hue and cry raised about marital unrest, and despite the frequency of divorce, happy marriages form the base of our social structure.

Mr. Staylate—The other night I heard a story that gave me such a start.

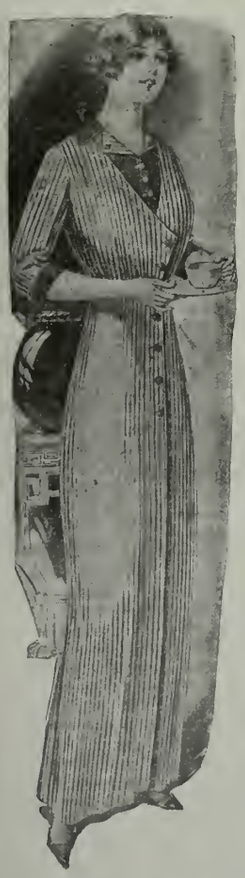
Miss Muchbored—I wish I knew it.

REAL BARGAINS

Are Shown in This 64-Page Midwinter Sale Catalogue. It's Yours FREE for the Asking

This beautiful special bargain sale Catalogue which is good only until March 1, 1914, contains wonderful money saving opportunities. For instance, it includes our annual white sale of Muslin Underwear—high class dainty garments beautifully made of fine materials, at prices less than you could make them at home for yourself. It also offers a complete line of ladies' waists, dresses, suits, skirts, coats, hats, house dresses, colored petticoats, corsets, knit underwear, hosiery, shoes and gloves; also misses' dresses, suits, etc., girls' dresses, infants' and boys' clothing, all at prices which mean a distinct saving to YOU.

Write To-Day and ask for Catalogue No. 61F



A Neat Dress for the House Only $1.00 Postage Paid

4F49. Neat, Well Made House Dress of pretty style, made of high-grade washable striped gingham, guaranteed fast colors. Will launder splendidly and prove a most convenient, simple and becoming dress for home wear. Dress is made with a becoming vest effect of plain gingham to match color of stripe in material. It is trimmed with self covered buttons as pictured, and has chic little striped revers at neck; collar and cuffs of plain gingham to match vest. Dress fastens visibly in front with contrasting gingham covered buttons. The skirt is plain, except for a stitched plait extending down front. Short sleeves only. Colors: Cadet blue and white, black and white or lavender and white stripes trimmed to match. Sizes 32 to 44, bust measure; skirt length 40 inches; finished with deep hem. **Price, All Mail or Express Charges Paid by Us--$1.00**

A Dainty Waist for $1.00

2F47. Kimono Style Blouse, of beautiful white Brussels Net over a net foundation; the neck is finished with a double plaited frill of net which is continued down front where the model fastens with beautiful Oriental pearl buttons. A chic feature is the silk ribbon band attached to the net foundation beneath, finished in front with large fancy bow. Sleeves are made with deep cap effect, the undersleeve being short and edged with lace. Colors: white with pink or light blue ribbon trimming. Sizes 32 to 44 bust.

Special price, Mail or Express charges Paid by Us ---------$1.00

We Satisfy You or Refund Your Money

BELLAS HESS & Co
WASHINGTON, MORTON & BARROW STS.
NEW YORK CITY, N.Y.

We Pay All Mail or Express Charges.

Roses - Palms - Fruit and Shade Trees

Large stock. Low prices. Send for Catalogue

THE E. GILL NURSERY CO.

West Berkeley, Cal.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

Useful and Up-to-Date Patterns

House Jacket, 7555

A WELL fitting, becoming house jacket is what every woman desires. This one is exceptionally attractive. It is finished with a smooth fitting peplum that does away with all bulk over the hips and includes separate sleeves of moderate size that can be finished below the elbows or at the wrists. Whether the jacket is worn over an odd skirt or made with a skirt to match, it is most satisfactory. Added to its other advantages, it is very simple, requiring very little time for the making. In the illustration, the collar is scalloped and that finish is always pretty, but piped edges and bands of contrasting material are equally in vogue. There are only front and back portions to the jacket and the front edges are finished with hems. The peplum is made in three sections and a belt connects it with the blouse portion. Whatever the length of the sleeves, they are gathered and joined to bands.

For the medium size, the jacket will require 3¾ yards of material 27, 2⅝ yards 36 or 1¾ yards 44 inches wide.

The pattern 7555 is cut in sizes for a 34, 36, 38, 40 and 42 inch bust measure and with elbow or long sleeves.

Work Apron, 7725

THE apron that is made with a frill at the bottom is always a practical one, for the frill standing out a little from the skirt beneath is a perfect protection. This one includes capacious patch pockets and a bib that can be extended to form straps over the shoulders or made plain as preferred. Such aprons are made from butchers' linen, white lawn, gingham, percale and similar materials. For the housewife who likes her work aprons finished in a dainty manner, butchers' linen with a little fancy stitching in red or blue would be pretty, for the material washes perfectly and endures the hardest usage. In the illustration, dotted percale is finished with machine stitching.

For the medium size, the apron will require 3½ yards of material 27 or 36 inches wide for the apron with straps; 3 yards 27 or 2¾ yards 36 for the apron without straps.

The pattern 7725 is cut in three sizes, small 34 or 36, medium 38 or 40, large 42 or 44 inches bust measure.

Child's One-Piece Nightgown, 8043

THE one-piece nightgown made in kimono style is a delightful one to wear and an easy one to make. This one is drawn up at the neck edge and it can be made high or cut to form a round neck just as liked and made with longer or shorter sleeves. Some girls will like the opening at the front, others will like to slip the gown over the head, and it can be finished in either way. All sorts of pretty materials are used in these days for sleeping garments, silk and cotton muslins as well as nainsook, batiste and the like. Cross-barred muslins are liked by some girls, too. When the gown is made without the opening and with the round neck, it is pretty to finish the edges with scallops and perhaps with a little embroidered design on the front.

For the 4 year size, the gown will require 2½ yards of material 27, 2 yards 36 or 44 inches wide, with 2½ yards of insertion, 1¾ yards of edging to trim as illustrated.

The pattern of the gown 8043 is cut in sizes for children of 2, 4 and 6 years and with round or high neck, long or short sleeves, with or without opening at front.

Corset Cover, 7612

THE garment that can be quickly and easily made and is at the same time dainty and attractive appeals to every woman who makes her own clothes. The main portion of this corset cover is cut all in one piece and, since the upper edge is straight, it is especially well adapted to flouncing. There are only under-arm seams and the closing is made at the center front by means of buttons and buttonholes. It can be finished at the waist line with a peplum and belt or with a belt only as preferred. In the illustration, it is made of embroidered flouncing. The armhole edges are finished with banding and edging and the belt is covered with beading and ribbon. In the small back view, the corset cover is shown made of nainsook trimmed with Valenciennes lace insertion and edging and finished at the waist line with a belt of beading and ribbon.

For the medium size, the corset cover will require 1¾ yards of material 36 or 44 inches wide; or, 1¾ yards of flouncing 15 inches wide with 1 yard of insertion, 1½ yards of edging, ¼ yard of beading and ⅜ yard of plain material 36 inches wide for the peplum.

The pattern 7612 is cut in sizes for a 34,,36, 38, 40 and 42 inch but measure. It comes with a straight upper edge, with or without peplum.

Two-Piece Skirt with Drapery, 8058

THE two-piece skirt that is draped at the sides makes the latest variation of that well liked model. Here is one the edges of which are attractively shaped. It gives fullness below the hips that is required by the latest fashion yet is plain below the drapery. Such a skirt will be found equally useful for the indoor gown and for the street costume. In the illustration, the skirt is made of silk eponge with trimming of buttons but it is adapted to crepe de chine and similar materials for indoor wear as well as to the ones that are fashionable for street costumes.

For the medium size, the skirt will require 4¾ yards of material 27, 2¾ yards 36, or 44 inches wide. The width at the lower edge is 1 yard and 14 inches.

The pattern of the skirt 8058 is cut in sizes from 22 to 32 inches waist measure. It can be made with the high or natural waist line.

Girl's Long Waisted Dress, 8060

TWO important features of the latest styles are to be found in this frock, the belt at the low waist line and the slightly open neck with the chemisette effect. The frock is as pretty and smart as can be and, at the same time, absolutely simple. The plain blouse and straight skirt are gathered and joined one to the other. A belt covers the seam and the closing is made all the way down the front so that, when washable materials are used, laundering is a simple matter. The sleeves are stitched to the armholes. Striped challis is the material illustrated and it is trimmed with the same material in plain color. Frocks of this kind, however, can be made from washable materials or from the cashmere that is so much used or from French serge as well as from the challis.

For the 10-year-size, the dress will require 3⅛ yards of material 27, 2⅝ yards 36, 3⅛ yards 44 inches wide with 7⅛ yards 27 for the trimming.

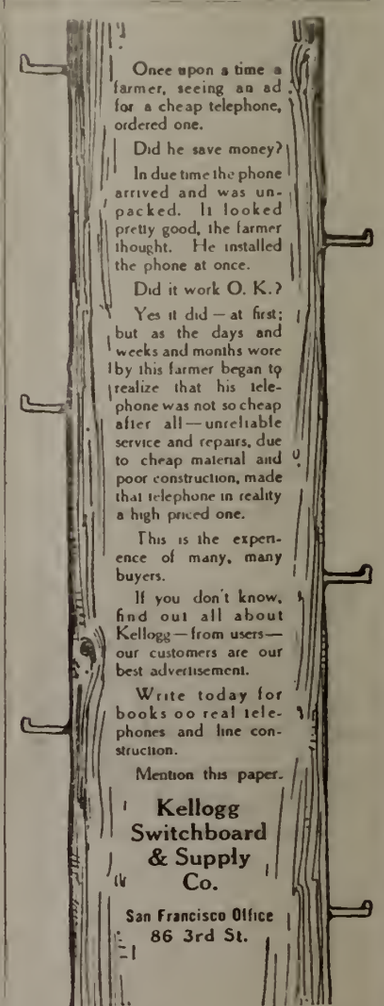
The pattern of the dress 8060 is cut in sizes for girls from 8 to 12 years of age. It comes with either long or short sleeves.

Any one or more of these patterns will be mailed to any address on receipt of 10 cents for each pattern. Address Fashion Department of "Orchard and Farm," Hearst Building, San Francisco, Cal.

Covers for Buttons—Very pretty buttons to match any material may be made by crocheting covers for button molds, with silk buttonhole twist the same shade of thread the material is stitched with. Tiny scallops crocheted from the same twist make a pretty finish for edges of silk or woolen clothing.—MRS. ENNIS D. WAIT, route 1, Jefferson, Ore.

Gum Arabic in Starch—Two ounces of gum arabic dissolved in a pint of boiling water (may be bottled). Use a tablespoonful to a pint of starch. This gives a newness to lawns, either black or colored, that nothing else can equal. It is also nice for white muslins.—MRS. A. L. BATY, Cedarville, Cal.

To Kill Squirrels—One of the cheapest and most efficient exterminators for ground squirrels is the castor oil bean. The squirrels eat them readily and die in their holes, where the beans should be dropped. Birds and wild game or poultry will not eat the beans. The shrub itself is ornamental—Mrs. E. F. Arnold, 93 Penn ave., Santa Cruz, Cal.



PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted FREE
Watson E. Coleman, Patent Lawyer, Wash., D. C.

THE BANDBOX

By Louis Joseph Vance

BENJAMIN STAFF, American author and playwright, leaving London for home, believes that no one knows of his intention. The day he leaves, a large bandbox is delivered at his lodgings. It contains a beautiful hat but nothing to show to whom it belongs. Staff takes the box aboard the liner, and discusses the mystery with Mr. W. H. Iff, who shares his stateroom. At Queenstown, Alison Landis, an actress with whom Staff believes himself in love, boards the liner, and Staff suspects her of sending the bandbox. Miss Landis has bought a wonderful string of pearls, and the purser warns her that it is unsafe to keep it in her stateroom. She refuses to part with it, and the purser asks Staff to induce her to do so, adding that a notorious crook—Arbuthnot Ismay—is on board, traveling under the name of W. H. Iff—Staff's roommate! Staff has become interested in Eleanor Searle, who has stage aspirations, and who also has a handbox identical with that which puzzles Staff. Miss Landis denies sending the box to Staff, who shows her the hat and leaves it and the box in her stateroom for a short time. Miss Landis declares that she has been robbed of the necklace, and the captain accuses Iff, who, however, produces papers showing that he is a secret service employee. The night before landing Iff disappears, and real secret service men say he is an impostor. Staff lands and goes to his apartment with the bandbox, and when he returns from dinner finds that someone has ransacked his rooms. Miss Landis calls, acknowledges sending the hat to Staff, and says she hid the necklace in the lining in order to smuggle it into the country. Staff, angry that she should lay him open to a charge of smuggling, breaks their engagement. When they search Staff's bandbox they find a different hat and no necklace, and it is evident that Miss Searle has taken the other box by mistake. After Miss Landis goes, Iff appears, and tells Staff that he is Ismay's cousin and that they are so alike that they are often mistaken for one another. He declares that Ismay was on the liner, disguised; that he was after the necklace and was undoubtedly the one who broke into Staff's apartments. Miss Searle telephones Staff that she has found the necklace and will at once bring it to him. She starts in a taxicab, but an attempt is made to rob her of the necklace. She escapes from the robbers and is again telephoning Staff when she is interrupted by a man who makes his way to her room. Then she telephones Staff that she is at the St. Regis and asks him to call at noon for the necklace, but her voice sounds peculiar and Staff is worried. He goes to sleep, however, and when he awakes Iff is gone. Alison telephones that she is going to see Miss Searle herself, and asks Staff to go with her. At the hotel they are told that Miss Searle and a strange man left at 5 o'clock in the morning. Alison declares she will put the police on the track of Miss Searle for stealing the necklace, but Staff, realizing that he has fallen in love with Miss Searle, threatens to tell of her attempt to smuggle unless she keeps still. Then he starts a search for the girl he loves.

NOW GO ON WITH THE STORY.

CHAPTER XII

Won't You Walk Into My Parlor?

SLIPPING quickly into the room through an opening hardly wide enough to admit his spare, small body, the man as quickly shut and locked the door and pocketed the key. This much accomplished, he swung on his heel and, without further movement, fastened his attention anew upon the girl.

Standing so—hands clapsed loosely before him, his head thrust forward a trifle above his rounded shoulders, pale eyes peering from their network of wrinkles with a semi-humorous suggestion, thin lips curved in an apologetic grin; his likeness to the Mr. Iff known to Staff was something more than striking. One needed to be intimately and recently acquainted with Iff's appearance to be able to detect the almost imperceptible points of difference between the two. Had Staff been there he might have questioned the color of this man's eyes, which showed a lighter tint than Iff's, and their expression—here vigilant and predatory in contrast with Iff's languid, half-derisive look. The line of the cheek from nose to mouth, too, was deeper and more hard than with Iff; and there was a hint of elevation in the nostrils that lent the face a guise of malice and evil—like the shadow of an impersonal sneer.

The look he bent upon Eleanor was almost a sneer; a smile in part contemptuous, in part studious; as though he pondered a problem in human chemistry from the viewpoint of a seasoned and experienced scientist. He cocked his head a bit to one side and stared insolently beneath half-lowered lids, now and again nodding ever so slightly as if in confirmation of some unspoken conclusion.

Against the cold, inflexible purpose in his manner, the pitiful prayer expressed in the girl's attitude spent itself without effect. Her hands dropped to her sides; her head drooped wearily, hopelessly; her pose personified despondency profound and irremediable.

When he had timed his silence cunningly, to ensure the most impressive effect, the man moved, shifting from one foot to the other, and spoke.

"Well, Nelly * * *?"

His voice, modulated to an amused drawl, was much like Iff's.

The girl's lips moved noiselessly for an instant before she managed to articulate.

"So," she said in a quiet tone of horror—"So it was you all the time!"

"What was me?" inquired the man inelegantly if with spirit.

"I mean," she said, "you were after the necklace, after all."

"To be sure," he said pertly. "What did you think?"

"I hoped it wasn't so," she said brokenly. "When you escaped yesterday morning, and when to-night I found the necklace—I was so glad!"

"Then you did find it?" he demanded promptly.

She gave him a look of contempt. "You know it!"

"My dear child," he expostulated insincerely, "what makes you say that?"

"You don't mean to pretend you didn't steal the bandbox from me, just now, in that taxicab, trying to get the necklace?" she demanded.

He waited an instant, then shrugged. "I presume denial would be useless."

"Quite."

"All right then; I won't deny anything."

She moved away from the telephone to a chair wherein she dropped as if exhausted, hands knitted together in her lap, her chin resting on her chest.

"You see," said the man, "I wanted to spare you the knowledge that you were being held up by your fond parent."

"I should have known you," she said, "but for that disguise—the beard and motor-coat."

"That just goes to show that filial affection will out," commented the man. "You haven't seen me for seven years—"

"Except on the steamer," she corrected.

"True; but there I kept considerately out of your way."

"Considerately!" she echoed in a bitter tone.

"Can you question it?" he asked, lightly ironic, moving noiselessly to and fro while appraising the contents of the room with swift, searching glances.

"As, for instance, your actions to-night. . . ."

"They simply prove my contention, dear child." He paused, gazing down at her with a quizzical leer. "My very presence here affirms my entire devotion to your welfare."

She looked up, dumfounded by his effrontery. "Is it worth while to waste your time so?" she inquired. "You failed the first time to-night, but you can't fail now; I'm alone, I can't oppose you, and you know I won't raise an alarm. Why not stop talking, take what you want and go? And leave me to be accused of theft unless I choose to tell the world—what it wouldn't believe—that my own father stole the necklace from me!"

"Ah, but how unjust you are!" exclaimed the man. "How little you know me, how little you appreciate a father's affection!"

"And you tried to rob me not two hours ago!"

"Yes," he said cheerfully: "I admit it. If I had got away with it then—well and good. You need never have known who it was. Unhappily for both of us, you fooled me."

"For both of us?" she repeated blankly.

"Precisely. It puts you in a most serious position. That's why I'm here—to save you."

In spite of her fatigue, the girl rose to face him. "What do you mean?"

"Simply that between us we've gummed this business up neatly—hard and fast. You see—I hadn't any use for that hat; I stopped in at an all-night telegraph station and left it to be delivered to Miss Landis, never dreaming what the consequences would be. Immediately thereafter, but too late, I learned—I've a way of finding out what's going on, you know—that Miss Landis had already put the case in the hands of the police. It makes it very serious for you—the bandbox returned, the necklace still in your possession, your wild, incredible yarn about meaning to restore it . . ."

In her overwrought and harassed condition, the sophistry illuded her; she was sensible only of the menace his words distilled. She saw herself tricked and trapped, meshed in a web of damning circumstances; everything was against her—appearances, the hands of all men, the cruel accident that had placed the necklace in her keeping, even her parentage. For she was the daughter of a notorious thief, a man whose name was an international byword. Who would believe her protestations of innocence—presuming that the police should find her before she could reach either Staff or Miss Landis?

"But," she faltered, white to her lips, "I can take it to her now—instantly—"

Instinctively she clutched her handbag. The man's eyes appreciated the movement. His face was shadowed for a thought by the flying cloud of a sardonic smile. And the girl saw and read that smile.

"Unless," she stammered, retreating from him a pace or two—"unless you—"

He silenced her with a reassuring gesture.

"You do misjudge me!" he said in a voice that fairly wept.

"Hope flamed in her eyes. "You mean—you can't mean—"

Again he lifted his hand. "I mean that you misconstrue my motive. Far be it from me to deny that I am—what I am. We have ever been plain-spoken with one another. You told me what I was seven years ago, when you left me, took another name, disowned me and . . ." His voice broke affectingly for an instant. "No matter," he resumed, with an obvious effort. "The past is past, and I am punished for all that I have ever done or ever may do, by the loss of my daughter's confidence and affection. It is my fault; I have no right to complain. But now . . . Yes, I admit I tried to steal the necklace in the Park to-night. But I failed, and failing I did that which got you into trouble. Now I'm here to help you extricate yourself. Don't worry about the necklace—keep it, hide it where you will. I don't want and shan't touch it on any conditions."

"You mean I'm free to return it to Miss Landis?" she gasped, incredulous.

"Just that."

"Then—where can I find her?"

He shrugged. "There's the rub. She's left town."

She steadied herself with a hand on the table. "Still I can follow her. . . ."

"Yes—and must. That's what I've come to tell you and to help you do."

"Where has she gone?"

"To her country place in Connecticut, on the Sound shore."

"How can I get there? By railroad? Eleanor started toward the telephone.

"Hold on!" he said sharply. "What are you going to do?"

"Order a timetable—"

"Useless," he commented curtly. "Every terminal in the city is already watched by detectives. They'd spot you in a twinkling. Your only salvation is to get to Miss Landis before they catch you."

In her excitement and confusion she could only stand and stare. A solitary thought dominated her consciousness, dwarfing and distorting all others; she was in danger of arrest, imprisonment, the shame and ignominy of public prosecution. Even though she were to be cleared of the charge, the stain of it would cling to her, an ineradicable blot.

And every avenue of escape was closed to her! Her lips trembled and her eyes brimmed, glistening. Despair lay cold in her heart.

She was so weary and distraught with the strain of nerves taut and vibrant with emotion, that she was by no means herself. She had no time for either thought or calm consideration; and even with plenty of time, she would have found herself unable to think clearly and calmly.

"What am I to do, then?" she whispered.

"Trust me," the man replied quietly. "There's just one way to reach

this woman without risk of detection —and that's good only if we act now. Get your things together; pay your bill; leave word to deliver your trunks to your order; and come with me. I have a motor-car waiting round the corner. In an hour we can be out of the city. By noon I can have you at Miss Landis' home."

"Yes," she cried, almost hysterical —"yes, that's the way!"

"Then do what packing you must. Here, I'll lend you a hand."

Fortunately, Eleanor had merely opened her trunks and bags, removing only such garments and toilet accessories as she had required for dinner and the theatre. These lay scattered about the room, easily to be gathered up and stuffed with careless haste into her trunks. In ten minutes the man was turning the keys in their various locks, while she stood waiting with a small handbag containing a few necessaries, a motor-coat over her arm, a thick veil draped from her hat.

"One minute," the man said, straightening up from the last piece of luggage. "You were telephoning when I came in?"

"Yes—to Mr. Staff, to explain why I failed to bring him the bandbox."

"Hmmm." He pondered this, chin in hand. "He'll be fretting. Does he know where you are?"

"No—I forgot to tell him."

"That's good. Still, you'd better call him up again and put his mind at rest. It may gain us a few hours."

"What am I to say?"

She lifted her hand to the receiver.

"Tell him you were cut off and had trouble getting his number again. Say your motor broke down in Central Park and you lost your way trying to walk home. Say you're tired and don't want to be disturbed till noon; that you have the necklace safe and will give it to him if he will call to-morrow."

Eleanor took a deep breath, gave the number to the switchboard operator and before she had time to give another instant's consideration to what she was doing, found herself in conversation with Staff, reciting the communication outlined by her evil genius in response to his eager questioning.

The man was at her elbow all the while she talked—so close that he could easily overhear the other end of the dialogue. This was with a purpose made manifest when Staff asked Eleanor where she was stopping, when instantly the little man clapped his palm over the transmitter.

"Tell him the St. Regis," he said in a sharp whisper.

Her eyes demanded the reason why.

"Don't stop to argue—do as I say; it'll give us more time. The St. Regis!"

He removed his hand. Blindly she obeyed, reiterating the name to Staff and presently saying good-by.

"And now—not a second to spare—hurry!"

In the hallway, while they waited for the elevator, he had further instructions for her.

"Go to the desk and ask for your bill," he said, handing her the key to her room. "You've money, of course?

"Say that you're called unexpectedly away and will send a written order for your trunks early in the morning. If the clerk wants an address, tell him the Auditorium, Chicago. Now . . ."

They stepped from the dimly lighted hall into the brilliant cage of the elevator. It dropped, silently, swiftly, to the ground floor, somehow suggesting to the girl the workings of her implacable, irresistible destiny. So precisely, she felt, she was being whirled on to her fate, like a dry leaf in a gale, with no more volition, as impotent to direct her course. . . .

Still under the obsession of this idea, she went to the desk, paid her bill and said what she had been told to say about her trunks. Beyond that point she did not go, chiefly because she had forgotten and was too numb with fatigue to care. The clerk's question as to her address failed to reach her understanding; she turned away without responding and went to join at the door the man who seemed able to sway her to his whim.

She found herself walking in the dusky streets, struggling to keep up with the rapid pace set by the man at her side.

After some time they paused before a building in a side street. By its low facade and huge sliding doors she dimly perceived it to be a private garage. In response to a signal of peculiar rhythm knuckled upon the wood by her companion, the doors rolled back. A heavy-eyed mechanic saluted them drowsily. On the edge of the threshold a high-powered car with a close-coupled body stood ready.

With the docility of that complete indifference which is bred of deadening weariness, she submitted to being helped to her seat, arranged her veil to protect her face and sat back with folded hands, submissive to endure whatsoever chance or mischance there might be in store for her.

The small man took the seat by her side; the mechanic cranked and jumped to his place. The motor snorted, trembling like a thoroughbred about to run a race, then subsiding with a sonorous purr swept sedately out into the deserted street, swung round a corner into Broadway, settled its tires into the grooves of the car tracks and leaped northwards like an arrow.

The thoroughfare was all but bare of traffic. Now and again they had to swing away from the car tracks to pass a surface car; infrequently they passed early milk wagons, crawling reluctantly over their routes.. Pedestrians were few and far between, and only once, when they dipped into the hollow at Manhattan street, was it necessary to reduce speed in deference to the law as bodied forth in a balefully glaring, solitary policeman.

The silken song of six cylinders working in absolute harmony was as soothing as a lullaby, the sweep of the soft, fresh morning air past one's cheeks as soft and quieting as a mother's caress. Eleanor yielded to their influence as naturally as a tired child. Her eyes closed; she breathed regularly, barely conscious of the sensation of resistless flight.

Hot and level, the rays of the rising sun smote her face and roused her as the car crossed McComb's Dam Bridge; and for a little time thereafter she was drowsily sentient —aware of wheeling streets and endless, marching ranks of houses. Then again she dozed, recovering her senses only when, after a lapse of perhaps half an hour, the noise of the motor ceased and the big machine slowed down smoothly to a dead halt.

She opened her eyes, comprehending dully a complete change in the aspect of the land. They had stopped on the right of the road, in front of a low-roofed wooden building whose signboard creaking overhead in the breeze named the place an inn. To the left lay a stretch of woodland; and there were trees, too, behind the inn, but in less thick array, so that it was possible to catch through their trunks and foliage glimpses of blue water splashed with golden sunlight. A soft air fanned in off the water, sweet and clean. The sky was high and profoundly blue, unflecked by cloud.

With a feeling of gratitude, she struggled to recollect her wits and realize her position; but still her weariness was heavy upon her. The man she called her father was coming down the path from the inn doorway. He carried a tumbler brimming with a pale amber liquid. Walk-

ATTENTION

HOMESEEKERS!! INVESTORS!!

A NEW CALIFORNIA

for the settler
on the line of the

WESTERN PACIFIC
DENVER & RIO GRANDE

TIMBER LANDS — MINERAL LANDS
ALFALFA LANDS — WATER POWER
ORCHARDS — CANNERIES
FACTORY SITES

FOR FULL PARTICULARS ASK ANY AGENT OR

F. A. WADLEIGH
Passenger Traffic Manager
Denver, Colo.

E. L. LOMAX
Assistant Passenger Traffic Manager
San Francisco.

WESTERN PACIFIC-RIO GRANDE
THE TRANSCONTINENTAL SCENICWAY

Louisa M. Alcott's Famous Book

Little Women

Now published in a new PLAYERS' EDITION containing 12 illustrations from scenes in the play. Read the book and see the play.

Over One Million Copies of "Little Women" Have Already Been Sold

and this wholesome story of New England family life was never so popular as it is to-day.

Already enshrined among the most delightful of youthful memories, "Little Women" will, in its newest form, make a wider and deeper appeal than ever.—Boston Globe.

Bound in Cloth. 617 pages.
Price, $1.50 net; by mail, $1.67

At All Booksellers or the Publishers

Little, Brown & Co., 34 Beacon St., Boston

ing round to her side of the car he offered it.

"Drink this," she heard him say in a pleasant voice; "it'll help you brace up."

Obediently she accepted the glass and drank. The soul of the stuff broke out in delicate, aromatic bubbles beneath her nostrils. There was a stinging but refreshing feeling in her mouth and throat. She said "champagne" sleepily to herself, and with a word of thanks returned an empty glass.

She heard the man laugh, and in confusion wondered why. If anything, she felt more sleepy than before.

He climbed back into his seat. A question crawled in her brain, tormenting. Finally she managed to enunciate a part of it:

"How much longer . . . ?"

"Oh, not a great ways now."

The response seemed to come from a far distance. She felt the car moving beneath her and . . . .no more. Sleep possessed her utterly, heavy and dreamless. . . .

There followed several phases of semi-consciousness wherein she moved by instinct alone, seeing men as trees walking, the world as through a mist.

In one, she was being helped out of the motor car. Then somebody was holding her arm and guiding her along a path of some sort. Planks rang hollowly beneath her feet, and the hand on her arm detained her. A voice said: "This way—just step right out; you're perfectly safe." Mechanically she obeyed. She felt herself lurch as if to fall, and then hands caught and supported her as she stood on something that swayed. The voice that had before spoken was advising her to sit down and take it easy. Accordingly, she sat down. Her seat was rocking like a swing, and she heard dimly the splash of waters; these merged unaccountably again into the purring of a motor. . . .

And then somebody had an arm round her waist and she was walking, bearing heavily upon that support, partly because she sorely needed it, but more readily because she knew somehow—intuitively—that the arm was a woman's. A voice assured her from time to time: "Not much farther . ." And she was sure it was a woman's voice. . . Then she was being helped to ascend a steep, long staircase. . . .

She came to herself for a moment, probably not long after climbing the stairs. She was sitting on the edge of a bed in a small, low-ceiled room, cheaply and meagerly furnished. Staring wildly about her, she tried to realize these surroundings. There were two windows, both open, admitting floods of sea air and sunlight; beyond them she saw green boughs swaying slowly, and through the boughs patches of water, blue and gold. There was a door opposite the bed; it stood open, revealing a vista of long, bare hallway, regularly punctuated by doors.

The drumming in her temples pained and bewildered her. Her head felt dense and heavy. She tried to think and failed. But the knowledge persisted that something was very wrong with her world—something that might be remedied, set right, if only she could muster up strength to move and . . . think.

Abruptly the doorway was filled by the figure of a woman, a strapping, brawny creature with the arms and shoulders of a man and a great, coarse, good-natured face. She came directly to the bed, sat down beside the girl, passed an arm behind her shoulders and offered her a glass.

"You've just woke up, ain't you?" she said soothingly. "Drink this and lay down and you'll feel better before long. You have had a turn, and no mistake; but you'll be all right now, never fear. Come now, drink it, and I'll help loose your clothes a bit, so's you can be comfortable. . . ."

Somehow her tone inspired Eleanor with confidence. She drank, submitted to being partially undressed, and lay down. Sleep overcame her immediately: she suffered a sensation of dropping plummet-wise into a great pit of oblivion.

CHAPTER XIII.

Wreck Island.

SUDDENLY, with a smothered cry of surprise, Eleanor sat up. She seemed to have recovered full consciousness and sensibility with an instantaneous effect comparable only to that of electric light abrutly flooding a room at night. A moment ago she had been an insentient atom sunk deep in impenetrable night; now she was herself—and it was broad daylight.

With an abrupt, automatic movement, she left the bed and stood up, staring incredulously at the substance of what still wore in her memory the guise of a dream.

But it had been no dream, after all. She was actually in the small room with the low ceiling and the door (now shut) and the windows that revealed the green of leaves and the blue and gold of a sun-spangled sea. And her coat and hat and veil had been removed and were hanging from nails in the wall behind the door, and her clothing had been unfastened—precisely as she dimly remembered everything that had happened with relation to the strange woman.

Her wrist-watch told her that it was after four in the afternoon.

She began hurriedly to dress, or rather to repair the disorder of her garments, struggling between surprise that she felt rested and well and strong, and a haunting suspicion that she had been tricked.

Of the truth of this suspicion, confirmatory evidence presently overwhelmed her.

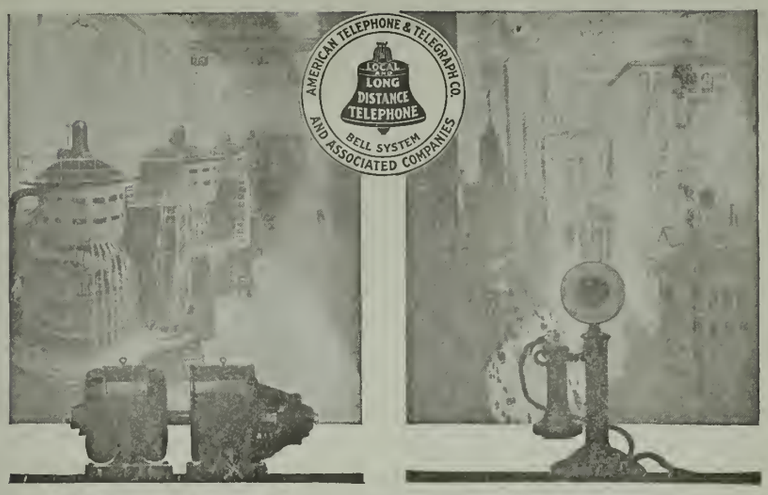
Since that draught of champagne before the roadside inn shortly after sunrise, she had known nothing clearly. It was impossible that she could without knowing it have accomplished her purpose with relation to Alison Landis and the Cadogan collar. She saw now, she knew now beyond dispute, that she had been drugged—not necessarily heavily; a simple dose of harmless bromides would have served the purpose in her overtaxed condition—and brought to this place in a semi-stupor, neither knowing whither she went nor able to object had she known.

The discovery of her handbag was all that was required to transmute fears and doubts into irrefragable knowledge.

No longer fastened to her wrist by the loop of its silken thong, she found the bag in plain sight on the top of a cheap pine bureau. With feverish haste she examined it. The necklace was gone.

Dropping the bag, she stared bitterly at her distorted reflection in a cracked and discolored mirror.

What a fool, to trust the man. In the clear illumination of unclouded reason which she was now able to bring to bear upon the episode, she saw with painful distinctness how readily she had lent herself to be the dupe and tool of the man she called her father. Nothing that he had urged upon her at the St. Simon had now the least weight in her understanding; all his argument was now seen to be but the sheerest sophistry, every statement he had made and every promise fairly riddled with treachery; hardly a phrase he had uttered would have gained an instant's credence under the analysis of a normal intelligence. He could have accomplished nothing had she not been without sleep for nearly twenty-four hours, with every nerve and fiber and faculty aching for rest. But, so aided—with what heartless ease



The Energizer of Business

IN a metropolitan powerhouse there must be generators large enough to furnish millions of lights and provide electrical current for thousands of cars and factories.

Each monster machine with the power of tens of thousands of horses is energized by an unobtrusive little dynamo, which is technically known as an "exciter."

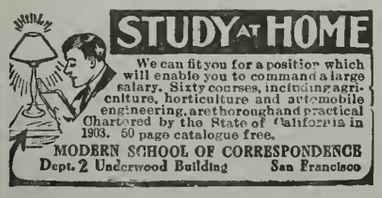
This exciter by its electric impulse through all the coils of the generator brings the whole mechanism into life and activity.

A similar service is performed for the great agencies of business and industry by the telephones of the Bell System. They carry the currents of communication everywhere to energize our intricate social and business mechanism.

United for universal service, Bell Telephones give maximum efficiency to the big generators of production and commerce.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*


STUDY AT HOME
We can fit you for a position which will enable you to command a large salary. Sixty courses, including agriculture, horticulture and automobile engineering, are thorough and practical. Chartered by the State of California in 1903. 50 page catalogue free.
MODERN SCHOOL OF CORRESPONDENCE
Dept. 2 Underwood Building San Francisco

Trappers
Write Us First Get our price list and shipping tags.
Highest Prices for Furs
We buy any quantity—every kind. Send today for prices and shipping tags sure.
McCullough & Tumbach, 171 N. Main St., St. Louis, Mo.

New KEROSENE LIGHT BEATS ELECTRIC OR GASOLINE
10 Days FREE—Send No Money
We don't ask you to pay us a cent until you have used this wonderful modern light in your own home for ten days, then you may return it at our expense if not perfectly satisfied. We want you to prove for yourself that it gives five to fifteen times as much light as the ordinary oil lamp; beats electric, gasoline or acetylene. Lights and is put out just like the old oil lamp; costs
Only 1 Cent for 6 Hours
Gives a powerful white light, burns common coal oil (kerosene), no odor, smoke or noise, simple, clean, won't explode. Guaranteed.
$1000.00 Reward
will be given to the person who shows us an oil lamp equal to this Aladdin in every way (details of offer given in our circular). Would we dare make such a challenge to the world if there was the slightest doubt as to the merits of the Aladdin? We want one person in each locality to whom we can refer customers. Write quick for our 10 Day Absolutely Free Trial Proposition, Agents' Wholesale Prices, and learn how to get ONE FREE.
AGENTS WANTED
to demonstrate in territory where oil lamps are in use. Experience unnecessary. Many agents average five sales a day and make $300.00 per month. One farmer cleared over $800.00 in 6 weeks. You can make money evenings and spare time. Write quick for territory and sample.
MANTLE LAMP CO., 91 Aladdin Bldg., Portland, Ore.

had he beguiled and over-reached her!

Tears, hot and stinging, smarted in her eyes while she fumbled with the fastenings of her attire—tears of chagrin and bitter resentment.

As soon as she was ready and composed, she opened the door very gently and stepped out into the hall.

It was a short hall, set like the top bar of a T-square at the end of a long, door-lined corridor. The walls were of white, plain plaster, innocent of paper and in some places darkly blotched with damp and mildew. The floor, though solid, was uncarpeted. Near at hand a flight of steps ran down to the lower floor.

After a moment of hesitation she chose to explore the long corridor rather than to descend at once by the nearer stairway; and gathering her skirts about her ankles (an instinctive precaution against making a noise engendered by the atmosphere of the place rather than the result of coherent thought) she stole quietly along between its narrow walls.

Although some few were closed, the majority of the doors she passed stood open, and these all revealed small, stuffy cubicles with grimy, unpainted floors, grimy plaster walls and ceilings and grimy windows whose panes were framed in cobwebs and crusted so thick with the accumulated dust and damp of years that they lacked little of complete opacity. No room contained any furnishing of any sort.

Half-way down the corridor she came unexpectedly to a second staircase; double the width of the other, it ran down to a broad landing and then in two short flights to the ground floor of the building. The well of this stairway disclosed a hall rather large and well-finished, if bare. Directly in front of the landing, where the short flights branched at right angles to the main, was a large double door, one side of which stood slightly ajar. Putting this and that together, Eleanor satisfied herself that she overlooked the entrance-hall and office of an out-of-the-way summer hotel, neither large nor in any way pretentious even in its palmiest days, and now abandoned—or, at best, consecrated to the uses of caretakers and whoever else might happen to inhabit the wing whence she had wandered.

Now as she paused for an instant, looking down while turning this thought over in her mind and considering the effect upon herself and fortunes of indefinite sequestration in such a spot, she was startled by a cough from some point invisible to her in the hall below. On the heels of this, she heard something even more inexplicable; the dull and hollow clang of a heavy metal door. Footsteps were audible immediately; the quick, nervous footfalls of somebody coming to the front of the house from a point behind the staircase.

Startled and curious, the girl drew back a careful step or two until sheltered by the corridor wall at its junction with the balustrade. Here she might see but not be seen, save through unhappy mischance.

The man came promptly into view. She had foretold his identity, had known it would be . . . he whom she must call father.

He moved briskly to the open door, paused and stood looking out for an instant, then with his air of furtive alertness, yet apparently sure that he was unobserved and wholly unsuspicious of the presence of the girl above him, swung back toward the staircase. For an instant, terrified by the fear that he meant to ascend, she stood poised on the verge of flight; but that he had another intention at once became apparent. Stopping at the foot of the left-hand flight of steps, he laid hold of the turned knob on top of the outer newel post and lifted it from its socket. Then he took something from his coat pocket, dropped it into the hollow of the newel, replaced the knob and turned and marched smartly out of the house, shutting the door behind him.

Eleanor noticed that he didn't lock it.

At the same time three separate considerations moved her to fly back to her room. She had seen something not intended for her sight; the knowledge might somehow prove valuable to her; and if she were discovered in the corridor, the man might reasonably accuse her of spying. Incontinently she picked up her skirts and ran.

The distance wasn't as great as she had thought; in a brief moment she was standing before the door of the bedroom as though she had just come out—her gaze directed expectantly toward the small staircase.

If she had anticipated a visit from her kidnaper, however, she was pleasantly disappointed. Not a sound came from below, aside from a dull and distant thump and thud which went on steadily, if in syncopated measure, and the source of which perplexed her.

At length she pulled herself together and warily descended the staircase. It ended in what was largely a counterpart of the hall above; as on the upper floor broken by the mouth of a long corridor, but with a door at its rear in place of the window upstairs. From beyond the door came the thumping, thudding sound that had puzzled Eleanor; but now she could distinguish something more: a woman's voice crooning an age-old melody. Then the pounding ceased, shuffling footsteps were audible, and a soft clash of metal upon metal; shuffle again, and again the intermittent, deadened pounding.

Suddenly she understood, and understanding almost smiled, in spite of her gnawing anxiety, to think that she had been mystified so long by a noise of such humble origin; merely that of a woman comfortably engaged in the household task of ironing. It was simple enough, once one thought of it; yet ridiculously incongruous when injected into the cognizance of a girl whose brain was buzzing with the incredible romance of her position.

Without further ceremony she thrust open the door at the end of the hallway.

There was disclosed a room of good size, evidently at one time a living-room, now converted to the combined offices of kitchen and dining-room. A large deal table in the middle of the floor was covered with a turkey-red cloth, with places set for four. On a small range in the recess of what had once been an open fireplace, sad-irons were heating side by side with simmering pots and a steaming tea-kettle. There was a rich aroma of cooking in the air, somewhat tinctured by the smell of melting wax, but in spite of that madly appetizing to the nostrils of a young woman made suddenly aware that she had not eaten for some sixteen hours. The furnishings of the room were simple and characteristic of country kitchens—including even the figure of the sturdy woman placidly ironing white things on a board near the open door.

She looked up quickly as Eleanor entered, stopped her humming, smote the board vigorously with the iron and set the latter on a metal rest.

"Evening," she said pleasantly, resting her hands on her hips.

Eleanor stared dumbly, remembering that this was the woman who had helped her to bed and had administered what had presumably been a second sleeping draught.

(To be Continued.)

(Copyright, 1912, by Little, Brown & Co., Boston, Mass.)

Save Your Money

A Limited Number of These High-Grade

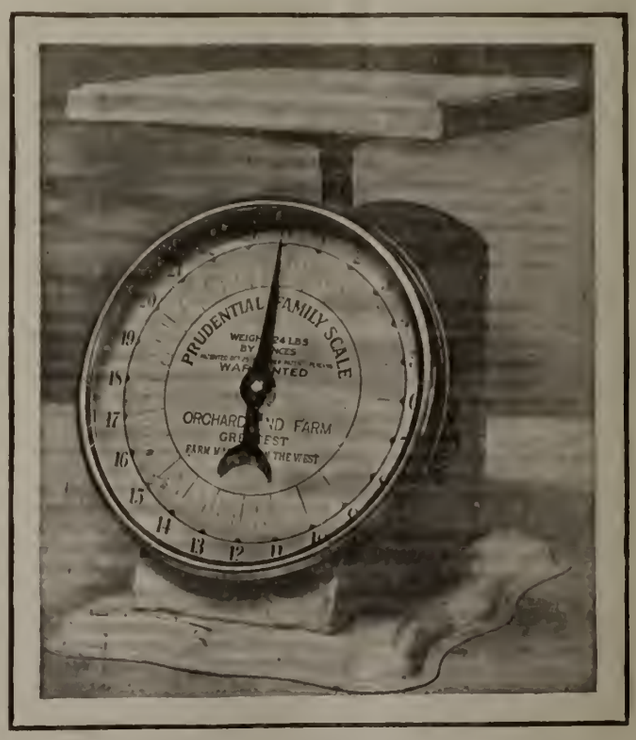
Family Scales

—AT—

$1.75

Are Retailing in San Francisco Stores for Three Dollars

Full Weight Assured



Finished in blue enamel; slanting dial; tile top; absolutely correct; packed separately in box.

Get One and Be Sure You Are Getting Full Weight for Your Money

RETURN THIS COUPON WITH $1.75

ORCHARD AND FARM,
San Francisco, Cal.
Enclosed please find $1.75 and send FAMILY SCALES to

NAME _____

ADDRESS _____

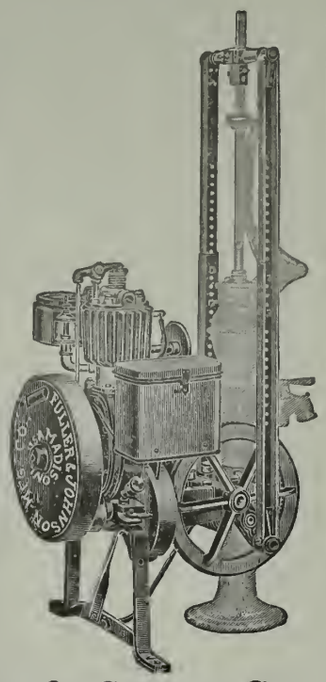
TOWN _____ STATE _____

LET THE "IRON HIRED MAN" DO YOUR WORK

The Famous FULLER & JOHNSON Farm Pump Engine "Fits any Pump and makes it hump"

The Farm Pump Engine, no matter what the weather, is always ready to supply at once.

270 to 2,450 Gallons of Water Per Hour All Over the World



This remarkable engine is safe—easy to operate—economical—durable—absolutely weather-proof—no belts, braces or special platforms needed. Comes ready to run. Will also operate grindstone, washing machine, separator, etc. That they are now used daily is the real evidence of their success. We want to tell you all about this remarkable engine—how it is made—what it will do for you.

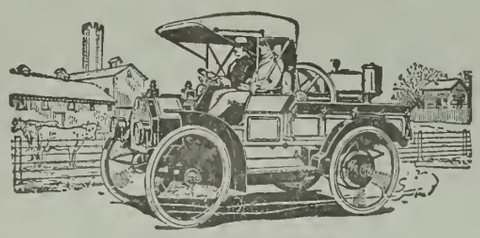
Catalogs and further information cheerfully sent on request

PACIFIC HARDWARE & STEEL CO.

Pacific Coast Distributers
SAN FRANCISCO

LOS ANGELES **PORTLAND**

International Harvester Motor Trucks



THE I H C LINE
GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Combination,
Peg and Spring-Tooth,
and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

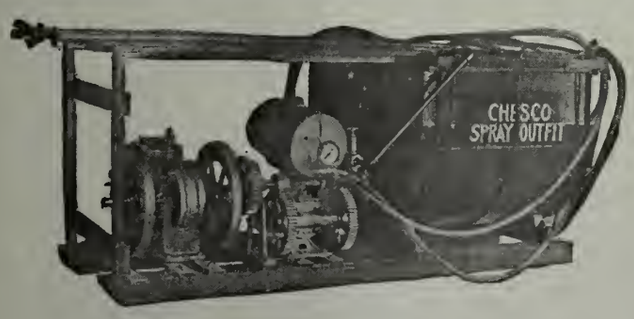
USE International motor trucks to handle your fruit and for your light hauling and note the decrease in your hauling and delivery expense. Note also the increase in profit due to the saving in the time the fruit spends on the road. No wonder so many fruit growers are buying International motor trucks. International motor trucks cost comparatively little to buy and less than horses and wagons to keep.

Their solid tires cut down tire troubles, and the wheels are high enough to insure good traction. The motor is simple and has plenty of power for emergencies. The brakes are safe on any hill. The ignition system is of the best. One lever controls the car. Springs are strong and resilient. The International is built to save you money.

Let us show you all that an International motor truck will do for you. Drop a card today for catalogues and full information to the

International Harvester Company of America
(Incorporated)
Denver—Helena—Portland—Spokane—Salt Lake City—San Francisco
Champion Deering McCormick Milwaukee Osborne Plano

CHESCO SPRAY PUMP



The most complete, economical and efficient spray outfit ever offered on the Pacific Coast.

Here's What You Get

A Z-S Engine—the Engine of Power and Simplicity; all Standard Z-S Engine Fittings. A Pump—good for 200 pounds' working pressure; a Covered Tank—which will hold 100 gallons of solution; 6½-inch Suction Hose with fittings and strainer; 48 feet ½-inch hose, in two pieces, with fittings for discharge lines; 2 10-ft. Bamboo Spray Poles—with complete fittings; 2 Twin Spray Nozzles—with complete fittings and extra nozzles.

The entire outfit mounted on channel iron frame, so that it can be put on running gear or on ordinary farm wagon. Mounting exceptionally light, but very strong. There is no enclosed machinery and there is ready access to pump and engine—merely remove two bolts and take off top.

A complete set of canvas curtains, which cover all machinery and parts, are furnished with the outfit.

The engine is complete in itself for pumping or other farm work, and can be taken off the channel iron foundation by merely removing four bolts. In replacing it is utterly impossible to place it back out of alignment, as there are no pipe connections to take care of.

Chesco Spray Outfit Complete $150

Further information on request.

CHESCO IRRIGATION MACHINERY

CALIFORNIA HYDRAULIC ENGINEERING AND SUPPLY CO.
72 Fremont Street, San Francisco

"Pacific Limited"

69 Hours To CHICAGO

Southern Pacific — Union Pacific

Chicago, Milwaukee & St. Paul

Lv. San Francisco (Ferry Station)	10:20 a. m.
Lv. Oakland (Sixteenth St. Station)	10:58 a. m.
Ar. Chicago (Union Station)	9:15 a. m.

Connecting with Trains Arriving New York 4th morning

Observation Car with Ladies' Parlor and Library, Writing Desk and Stationery, Stock and News Reports by wire.

Pullman Drawing Room Compartment Cars with Sections and Berths. Pullman Tourist Sleeping Car. Dining Car.

All Classes of Tickets

Protected by Automatic Electric Block Safety Signals

UNION PACIFIC

42 Powell St. Phone Sutter 2940

SOUTHERN PACIFIC

THE EXPOSITION LINE—1915

SAN FRANCISCO: Flood Building Palace Hotel Ferry Station Phone Kearny 3160
Third and Townsend Streets Station Phone Kearny 180

OAKLAND: Thirteenth Street and Broadway Phone Oakland 162
Sixteenth Street Station Phone Lakeside 1420 First Street Station Phone Oakland 7900

give 'em a good start

No food for the first 24 hours—then chopped up hard boiled eggs for the next 12 hours—and then carefully balanced chick feed until they get good strength—and you have started baby chicks right. But be sure it's

SPERRY'S GRITLESS BABY CHICK FEED

Baby chicks' internal organs are delicate things, requiring the right kind of food, or else indigestion sets in. And indigestion causes more deaths in baby chicks than any other cause.

Gives 'em the right start. They gain vitality day by day; and count this gain day by day and you get healthy, normal chickens at maturity. They'll do their duty of laying their share of egg-profit for you, or brings you extra money as extra fine broilers.

Extra care—extra thought—scientific analysis—with the right kind of machinery to get thorough mixing and perfect granulation are the reasons that Sperry's Chick Feed meets every requirement as a feed for chicks.

The grains are as carefully selected as those used in the manufacture of our flour and cereals; the same care for granulation is exercised, and the careful scientific blending to meet the requirements of the baby chicks' delicate organs is made as is Sperry's Flour for human beings.

Here Are the Elements In SPERRY'S GRITLESS BABY CHICK FEED

Milo Maize, Indian, Kaffir and Egyptian Corn grits.

Somoro, Turkey and Chule Wheat grits.

Kiln dried oat grits.

Yellow millet and hempseed.

A little charcoal.

Medium ground dry bone.

The right quantity of medium meat scraps.

—all grains cracked in the cereal mill for perfect granulation and then perfectly mixed by machine.

Scientific analysis and scientific compounding produce this perfect chick feed. Men are employed who are experts in this line of selecting the best and making the most suitable chick feed that brains, money and materials can produce

Profit Sharing Coupons

In every 50-lb. sack you will find one coupon; two in every 100-lb. sack. Fifteen of these coupons are good for one 50-lb. sack free, delivered to you by your dealer, a saving of 7½%.

Sperry's Baby Chick Feed is sold in 10-lb., 25-lb., 50-lb. and 100-lb. sacks. Your dealer carries it—if not, notify us and we will tell you where you can get it conveniently.

Send for Our Booklet O. F.

It's written by men who know how to raise baby chicks. It contains information that you should have. It will be a valuable help to you. Send for it and samples to-day. They're yours for the asking.

TEAR OFF AND MAIL

STOCK AND POULTRY FOOD DEPT., SPERRY FLOUR CO., Stockton, Cal.

Without obligation on my part, please send me your booklet on feeding chicks, and the free coupons.

Name.....

Address.....

Address Stock and Poultry Food Dept.

SPERRY FLOUR CO.

STOCKTON CALIFORNIA

CALIFORNIA STATE

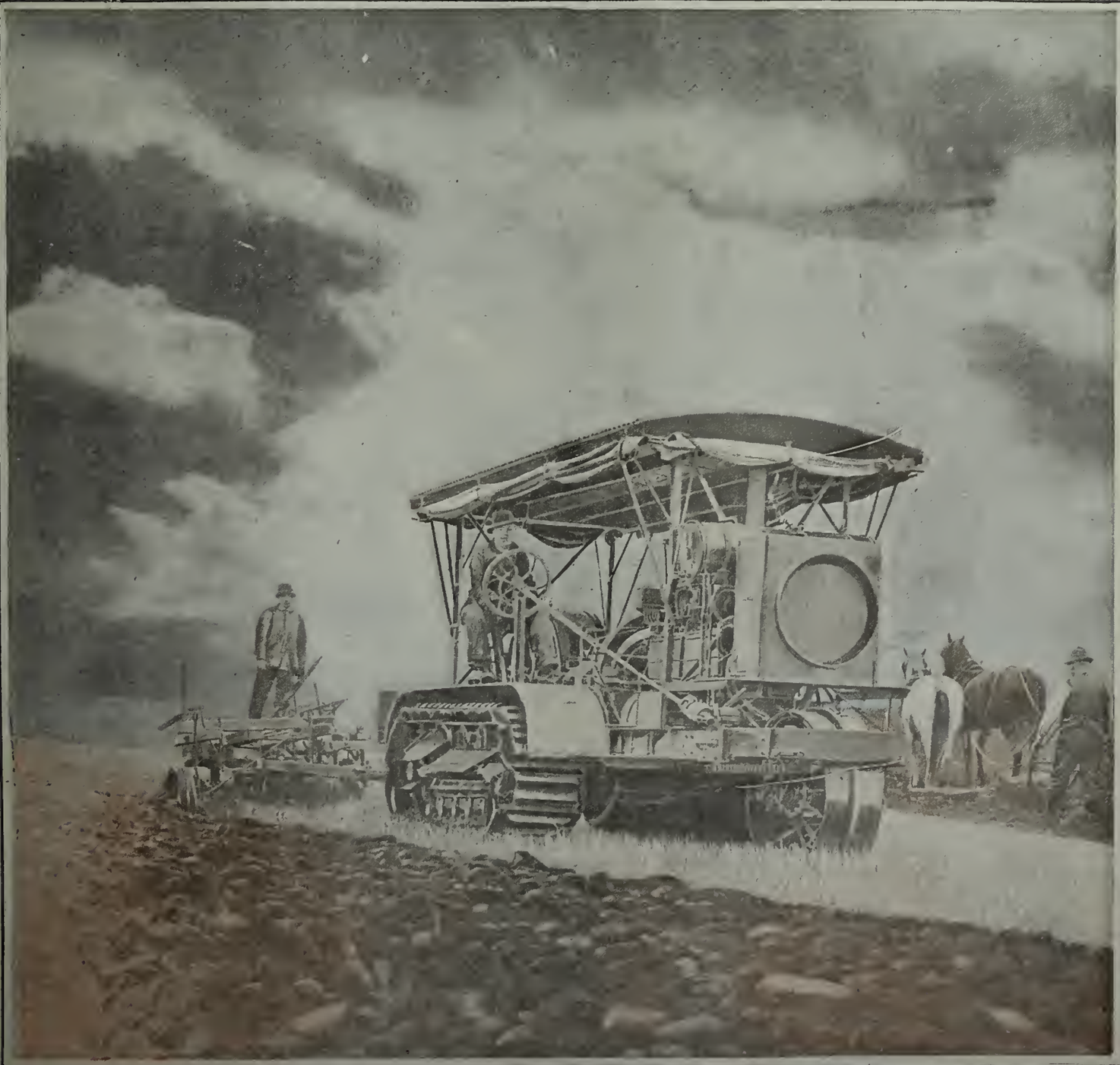
ORCHARD and FARM

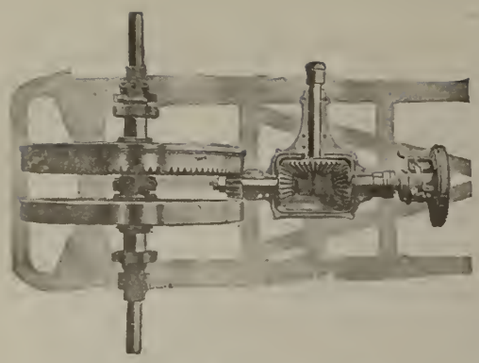
HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888
IRRIGATION

STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 2 Published by Country Life Publishing Co. February, 1914 Hearst Building, San Francisco, Cal. $1.00 a Year





1914 Caterpillar Transmission

CATERPILLAR
Reg. U.S. Pat. Off.

Improvements for 1914

NEW TRANSMISSION—Three-bevel-gear reverse substituted for shifting shaft previously used. See cut above. Gears are heat-treated, hardened and ground, steel inclosed in oil-tight, dustproof gear case. They revolve in oil constantly. Gears are shifted similar to an automobile.

NEW TYPE CATERPILLAR TRACK—Chain pin sleeves, pin holes in track side bars, specially machined for close fit. Top rail of track machined to perfectly flat surface. Pin sleeves larger diameter, one inch longer. "L" head pin instead square head. Steel track pins and bushings turned, hardened and polished. Side bars of track especially hardened steel. Truck wheels semi-steel, chilled face, bronzed bushed, finished hubs. Case hardened gudgeon pins with hardened steel washers to assume side thrust.

NEW FRAME—Super-frame and motor lowered 6 inches, thereby lowering center of gravity and avoiding vibration. Clearance under tractor increased 1½ inches. 4x4x½-inch angle used in "U" frame instead 4x3x⅜-inch. A 10-inch channel carries the box of main drive pinion instead of 4x3x⅜-inch formerly used. Two ¾x4-inch trusses extend from motor back to 10-inch channel at rear. Two braces inserted from "U" frame on each side down to "H" beam. Whole frame additionally braced by "A" braces of ¾x4-inch material.

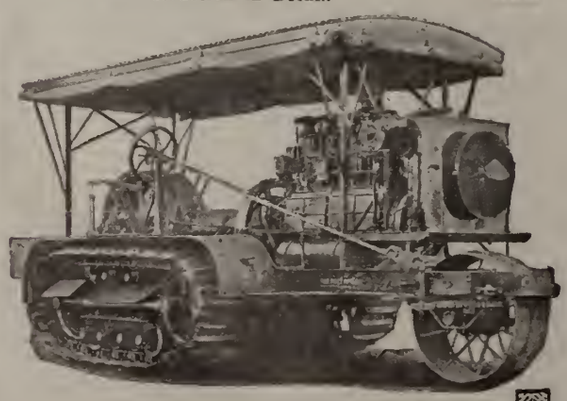
NEW STEEL PLATFORM—A new steel deck is bolted to the frame, affording greater rigidity to tractor and adding strength to the frame. It completely covers the track and extends along side the motor, providing a running-board for engineer when making adjustments. All oil cans, tool boxes, etc., have been removed from deck, presenting clean, flat surface with no obstructions.

SHAFTS AND SPROCKETS—Rear track shaft is made in one solid piece, 3 7-16 inches diameter. Track sprockets and first motion chain sprocket coupled together on steel sleeve and journal, one sleeve turning loose on bronze bushing, the other fastened to shaft, thus obtaining necessary equalization of motion. New track sprockets are semi-steel, cast in a chill, thus obtaining smooth, hard surface for track pin sleeves. They are also ring sprockets, facilitating repairs and reducing cost of replacements. Their face has been increased one inch in width, giving double wearing surface. The new front blank sprockets are made of steel, of larger diameter and one inch wider face. They are bronzed bushed with dust caps on each end of hub.

MOTOR IMPROVEMENTS—New and much stronger motor support substituted. Valve trouble has been eliminated by use of electrically welded valves of improved design, lighter construction and of special steel. Contour of cams changed for easier action on valve lifts and springs and lessening liability of breakage. Fly wheel is heavier. Force feed auxiliary oiling system for oiling cylinders installed, magneto shaft improved, a new design spark and throttle control evolved, gravity feed for fuel substituted for pump, and radiator changed to correct all leakage.

MISCELLANEOUS—Front wheel increased five inches in diameter and four inches in width, and new and stronger support provided. Use of spring drivers discontinued and spring draw-bar substituted. Two draw-bars are furnished with 1914 Caterpillar, a pendulum bar and a stationary bar eight inches above former. Pendulum bar lessens side draft and facilitates turning. A steel first motion chain substituted for malleable chain and upper sprocket made of .50 carbon crucible steel. It is also a ring sprocket. A new stationary attachment with a gear reduction of 3 to 2 is used, with cut steel gears running in oil. Shields have been placed over large bevel gear and pinion and main clutch to prevent danger of accident.

Send for Bulletin O. F., Describing 1914 Construction in Detail.



Nine Years' Constant Effort Has Produced the 1914 Caterpillar Tractor

The 1914 Caterpillar is a dependable tractor, dependable in material and construction. No part of it is theory. Every part of it is based on conclusions supplied by years of study of actual field conditions. Two of the important features—light weight and simplicity—which have helped to make the Caterpillar the dominating tractor in the West, have been retained.

In 1913 the Caterpillar, in actual field tests presided over by competent judges, outpulled tractors of greater weight and higher rated horsepower, solely because of the simplicity of construction, which at once affords both light weight and little loss of draw-bar horsepower.

As an added safeguard we have established a thorough and reliable system of inspection of all parts and material, which commences with the first process and continues until the tractor is completed. This applies not only to the construction of the tractor itself, but to the making of extra parts, from the mold or shop to the bins.

CATERPILLAR
Reg. U.S. Pat. Off.

Caterpillar Service Department

The announcement of the establishment of the Caterpillar Service Department is one of the utmost importance. No other manufacturer provides it. It is a departure from all established customs, but it indicates our earnest desire to provide you with the best tractor and the highest tractor efficiency. Our obligation to the purchaser does not cease after the machine has been delivered and paid for. He must secure from that machine the real service for which it was intended.

The Caterpillar Service Department will periodically inspect all Caterpillars in the field at no cost whatever to the owner. Expert Caterpillar engineers have been assigned territories, provided with automobiles and instructed to adopt a definite route, to embrace all the Caterpillars in that territory. When all have been visited, he starts anew, visiting each one in turn again and again. He will offer advice, instruct you or your engineer in Caterpillar operation and construction and endeavor in every way to promote your work to the highest possible efficiency. We repeat, this service costs you nothing after you have become a Caterpillar Owner.

The Caterpillar will be demonstrated at the Fresno and Marysville exhibitions in February. You should plan to be present and in the meantime we should be glad to send you our Bulletin O. F., describing 1914 construction in detail. If you are interested you may also secure Holt Harvester and Plow Catalogues.

The Holt Manufacturing Co.

Stockton, California **Peoria, Illinois**

ORCHARD AND FARM
IRRIGATION

Vol. XXVI FEBRUARY, 1914 No. 2

Demonstration of Traction Engine Uses

Plowing and preparing the seed bed is the hardest work on the farm. This can be made easy with the use of a tractor.

USE and utility is interwoven with every phase of progress in all lines of human activity. California and Pacific Coast farmers by rapidity of improved progress in means and methods of farming have come to know much about the use and utility of power equipment to supplement or replace horse power in farm work. Much in general has been learned by a considerable number in the use and effectiveness of traction engines in general farm and orchard work in this region, but on account of the very extended and rapid farm development in California with many new people meeting new conditions each year, much still remains to be learned. In fact, ultimate development and possibilities considered, this matter of "farming with iron horses" is still hardly out of its infancy.

The day of land grants, of big ranches, in the sense used in the 80's and 90's is past. The day of loose farm labor conditions which by its very looseness made it a condition easily met, passed with the big ranches. So to-day we have rapidly increasing conditions of intensity in farm work; more people; more farms; more effective methods; specialized crops, and hand in hand with it all a growing scarcity of help because of greater demand for it.

Coupled with the help problem is the horse question of expense, in cost and feed and handling, and the fact that more and more California is developing as a direct producer of food for humans rather than for four-footed animals.

So the matter of iron horses; of internal combustion traction engines, for farm work is a live one before Californians to-day, with the promise of being still more alive during the next decade. Realizing this fact and the growing importance of the situation, Orchard and Farm is pleased to announce that a step forward toward more and better understanding of the use and utility of gas traction engines, and supplementary equipment, has been taken by the promotion of a demonstration exhibition of traction engines and machinery to take place February 19, 20 and 21 at Fresno. This meeting at Fresno is designed for the San Joaquin valley and a little later a similar one will be held at an equally available point in the Sacramento valley, announcement of which will soon be made in detail

As the name states this is to be a demonstration exhibition—a showing of a majority of machines being sold in California side by side under identical conditions of actual work. Big and little will be there to demonstrate their various practical uses, and while it is obvious that the little can not do all the work of the big, and vice-versa, it is equally true that each has its adapted uses and this demonstration will show those uses.

To the man casually interested in power farming, the meeting will commend itself. Of the man vitally interested, it will command attention because never before on the West Coast has an equal opportunity for personal investigation been created. You have seen two, four or eight machines working together, perhaps, but never a score or more different types and makes, with many kinds of tools as well.

All competitive tests, contests, trials, etc., will be eliminated from the programme at this meeting, and no prizes, awards, or ribbons will be given—it having long been proved that prize-giving and prize-winning means little or nothing to either the giver or receiver, still less to the spectator. Instead, this will be purely an educational demonstration at which each spectator will form his own conclusions by applying his own observations.

The headquarters for the meeting will be Fresno. The demonstration exhibit will take place on a part of the Bullard lands, north of that city. The location is readily reached by the electric line from Fresno, so that conditions are made favorable for those who will attend. No charge for admission will be made.

Special round-trip passenger rates of one fare and a third will be in effect throughout the San Joaquin Valley for this meeting, and on account of its timeliness and ease of access, there is every indication of a good attendance.

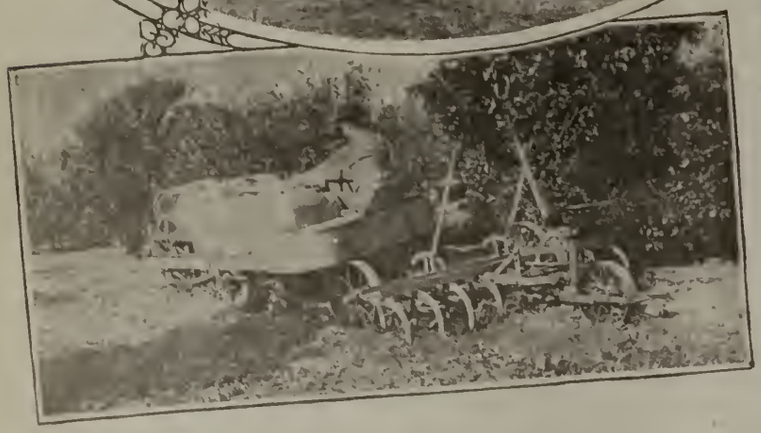
The co-operation of the College of Agriculture of the State University has been ably extended to this meeting through Thomas F. Hunt, Dean, in the person of F. L. Peterson, now in charge of the division of farm mechanics at the farm school, Davis

Mr. Peterson is at the head of the programme and arrangements committee, the other two members being a prominent agriculturalist of Fresno County and a representative of Orchard and Farm, three in all. The Fresno Chamber of Commerce is also actively interested in and supporting the demonstration exhibition.

This announcement should be considered by each interested reader as an invitation to attend and with the invitation goes the assurance that what you see will be both unusually interesting and profitable to you. For more detailed information, see other pages of this issue, or write Orchard and Farm.

Will Show All Classes of Tractors

There are few phases of the heavy work on a farm that the tractor can not be adapted to.



CALIFORNIA has thousands of acres which, while they have been farmed in a haphazard way for a number of years, still offer excellent opportunities for power development. While there are a large number of traction outfits being successfully used in this State as well as in other States, power farming is just in its infancy, and California is behind the balance of the States. The principal reason for this is that manufacturers, and particularly the Eastern manufacturers, have not been interested in the possibilities of the undeveloped business in traction machinery on the Pacific coast. The great plains of the Middle West and of western Canada have taken most of their attention on the continent. Also the demands from foreign grain growing countries have taken considerable of their output.

There are only a few manufacturers represented in this State, but they have introduced some of the best of the machines into this territory. These manufacturers have not so persistently demanded the attention of the ranchers of the coast States as they have in other territories, and for that reason California ranchers are comparatively unfamiliar with the many advantages to be obtained from the scientific use of this class of machinery and its accessories.

Perhaps nowhere has education in the uses and advantages of tractors been so great as in western Canada. Each year for the last five years great contests have been conducted by tractor manufacturers near Winnipeg and there hundreds of machines are annually exhibited. There, however, the events have been contests of manufacturers more to prove superiority of the mechanical development of their tractors. Also in that territory only the heavy and powerful machine is given consideration because of the great loads required of it in farm work in that section.

In California and the other Pacific coast States the farming conditions are different. While here the heavy, powerful machine is required for some work there is much room for a light and less powerful engine for orchard and small farm uses.

The meeting to be held at Fresno on February 19, 20 and 21 is not to be a contest such as is held at the Canadian town, but it is to be an educational demonstration. There will be no contests. No prizes will be offered and there will be no one there to say which is the best machine. The manufacturers will be there to show what their tractors and their plows and their cultivators will do under actual working conditions. It will be for the farmer who attends and watches the demonstrations to say what tractor and what other agricultural implements that are shown best suits his requirements.

There will be many types of tractors and tractor plows and cultivators at this demonstration, and it would be well for every farmer who can to be present. He will learn much in the way of efficiency in farm operation, and if the time should come when he buys a tractor he will have much information on the subject gathered at first hand when making the purchase.

Here is what some of the manufacturers have to say regarding the demonstration:

A. L. LAW, Hackney Manufacturing Co.—I want to assure you of my co-operation in this enterprise on your part. These demonstrations appeal to me on account of the large number of persons who will be glad of the opportunity of seeing a collection of tractors of different makes in operation in the same field.

W. H. GARDNER, The Yuba Construction Co.—We are very glad to give our hearty co-operation to the exhibition of the various tractors.

G. W. HALLOWELL, The H. C. Shaw Co.—We are interested in the proposed demonstration of the gas tractors and the implements suitable for use with the same.

G. C. GREENE, Fairbanks, Morse & Co.—We will be very glad to take part in the traction engine demonstration.

E. S. JONES, J. I. Case Threshing Machine Co.—We do not hesitate to fully indorse the plan of a traction engine demonstration.

J. C. KROYER, Samson Iron Works—We fully indorse the plan of the tractor demonstration, and we feel that it will be very beneficial to our State.

A. S. GIFFORD, Benicia Iron Works.—We are pleased to learn that you are going to conduct a first-class demonstration, and we look forward to the event as being one of considerable importance and value to the manufacturers of agricultural implements and to farmers and ranchmen as well.

A. F. GEORGE, Hart-Parr Co.—We believe that a real lively demonstration of several of the leading traction engines on the market would be a good thing.

M. J. HEALEY, John Deere Plow Co.—A practical demonstration of power plowing machinery appeals to us.

R. S. SPRINGER, The Holt Manufacturing Company.—We will be very glad to co-operate in the tractor demonstration.

C. L. BEST, C. L. Best Gas Traction Co.—The tractor demonstration is a very good plan and we heartily coincide with it.

S. J. SMITH, Smith-Booth-Usher Company.—We believe such a demonstration will benefit both the prospective purchasers of tractors and their manufacturers.

G. G. SHIELDS, Rumely Products Company, Inc.—We are heartily in accord with this educational demonstration and will be only too glad to give assistance within our power to make it a success.

Clean and deep furrows turned by the auto plow.

Students at Farm School

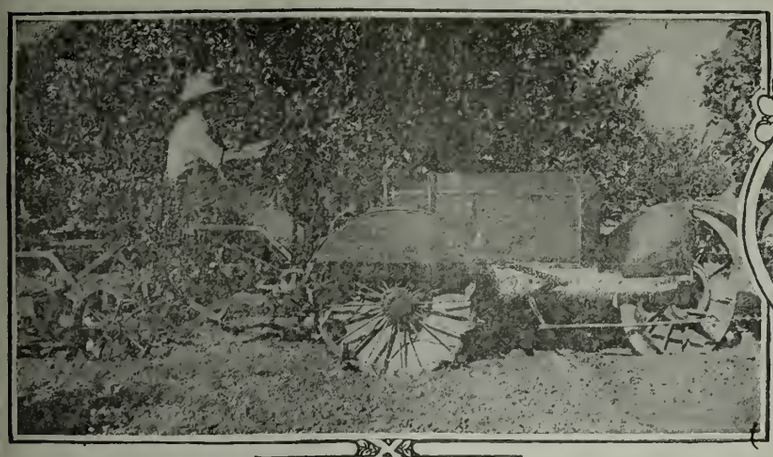
A large delegation of students from the four-year agricultural course at Berkeley will spend the half year beginning January 5 at the University Farm, making use of its fine equipment for agricultural training in the shape of livestock, orchards, vineyards, experimental plots, irrigation system, butter and cheese-making plants, certified dairy, farm machinery, etc. These Juniors and Seniors from the College of Agriculture will be in addition to the 187 young men who are enrolled at Davis for the three-year practical course in the University Farm School.

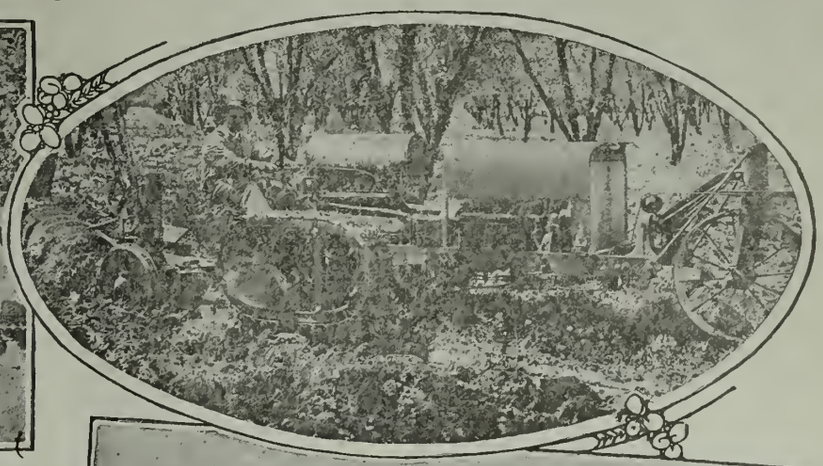
Business on the Farm

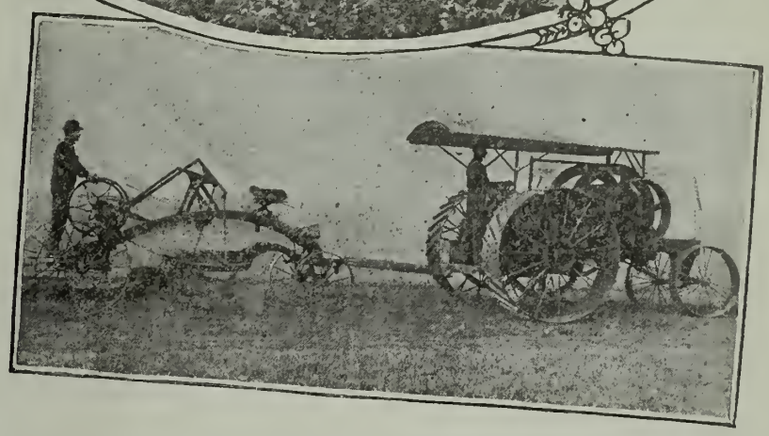
Farming is becoming such a complicated business that certain factors are just as necessary in making it a success as in any other business

Efficiency of the Farm Tractor

L. W. Ellis and E. A. Rumely in "Power and the Plow."







The tractor can make play of the drudgery of the farm and lighten the burdens of the farmer.

POWER controls our modern world, and since the dawn of history it has been the dominating influence in the transition from savagery to civilization. The human race has always required power for three great essential purposes: tilling the soil to grow food and raw materials; changing the shape of materials to adapt them for use; and carrying men and products from place to place. In other words, power is required for agriculture, manufacturing and transportation.

The tiller of the soil in all ages has surpassed his contemporaries in the arts and commerce, in adapting animal power to human needs. He is thus the last to feel the need of a change to mechanical power, and so has escaped the final stage in the industrial revolution. But he is now about to complete the cycle. He has come to the point where the methods of the past will no longer suffice if he is to keep pace with the other factors in the world of industry.

Agriculture—the production of food stuffs—cannot be concentrated physically. The farmer's workshop is broad, and his power needs as great at one corner as at another. The power plant for his work must be portable; if possible, self-propelling. Until the present generation nothing so met his requirements as the animal muscle.

The farmer to-day has wonderful agencies to make his work easy. Farm machinery has been marvelously perfected. Agricultural scientists are solving his problems, but with all the assistance given him the American farmer is falling behind in his work. In the past America has been called upon to feed not only her own natural increase in population and the outpouring of the nations of Europe, but millions of those who remained behind. Faster, surer methods than had ever before prevailed were necessary. Intensive cultivation deferred to extensive production and the task was accomplished. The United States now faces a different problem—that of feeding a swiftly increasing population with a slowly increasing acreage. Intensive methods and more power must be applied. Teachings of agricultural scientists must be universally heeded. Better seed, deeper plowing, more thorough tillage, must lay the foundation for greater yields from each acre. Waste places must be reclaimed, our whole productive area developed and occupied. Our present needs are enormous, increasing more swiftly than these ideals can be realized. Greater areas must be brought immediately into productiveness; must maintain maximum yields indefinitely if production is to keep pace with demand.

The lack of power for plowing is the greatest obstacle to the extension of our wheat raising area into virgin fields and the realization of greater returns from our older lands. Plowing is the greatest single item of power consumption on the farm. From all over the West comes a cry for deeper plowing to establish a moisture reservoir in the soil. To do this more power is required—power that cannot be economically supplied by animals because of the high cost of maintenance and the lack of work during all but a few weeks each year. The animal muscle has reached its present perfection only after ages of natural selection, extending back to the very dawn of life. Further perfection must be slow, individual rather than racial. Many mechanical motors already surpass the horse in commercial efficiency. The animal must have frequent rest while at work. Under average farm conditions it is idle eight hours in nine, yet it must be kept warm and sheltered, must be fed and watered three times a day whether in use or not. It deteriorates rapidly in use or in idleness.

The new farm power, the mechanical tractor, does not age nor deteriorate when idle, and requires neither fuel nor attention when not at work. It solves the peak loads in agriculture—seed time and harvest time. The time spent annually in caring for one horse will keep it in perfect working condition. It concentrates in one man's hands the power of twenty horses, the endurance of a hundred and adds many fold to the acres he can cultivate. For the present it consumes nothing from acres which might produce food for mankind.

In all dry-farm tillage operations there are three great problems: The conservation of soil water; the eradication of weeds, and the securing of proper physical conditions of the soil. Of these the first is by far the most important. By the means employed to secure an adequate supply of soil water the other ends are largely accomplished. So vital is this need that an enormous premium is placed upon prompt and rapid action at all times when the stock of moisture is endangered. The traction engine works swiftly. It is tireless. It relieves the farmer from rush and anxiety, and he has turned to it eagerly as the lever by which he can control the moisture situation. This one advantage, capacity, has made him master of his environment. Were there no other consideration in its favor, the tractor would still hold an important place in dry-land agriculture. Methods vary with conditions and with people. Each section gains its ends independently. Yet into every part of the great semi-arid plains the traction engine has found its way and proved its usefulness. A review of farm practice in dry-farming districts reveals no condition where it is not a most useful servant.

New and more fertile farms underlie the old, and farmers are adding to their acres by doubling the depth of plowing. Not only do they double the feeding ground for the roots of plants, but they more than double the moisture holding capacity of the soil. Animals, already limited in number by the crop-cycle which enforces a long, expensive period of maintenance each year with no return, cannot profitably be kept to do this increasingly difficult work. Only the insensate mechanical tractor combines the strength, endurance and economy of maintenance necessary to coax satisfactory yields from this region of fertile soil and uncertain rainfall, and convert them into large net profits.

In selecting a tractor there are countless factors to be taken into consideration. One should satisfy himself as to the investment; the efficiency in various particulars; the question of fuel supply; the cost of maintenance during work and idleness; the attendance required; the concentration of power; the speed; effect upon the soil; the range of usefulness; the endurance and the many phases of each and every one of these essential considerations.

To the Editor, Orchard & Farm: I wish to state that I heartily approve your plans for the holding of a traction demonstration, and to assure you of the co-operation of the Division of Farm Mechanics of the University of California College of Agriculture.

F. L. Peterson.

It is to be purely a demonstration and not a contest. There are to be no prizes awarded whatever, and that all the manufacturing concerns are free to enter as many different types of tractors as they may care to, subject to such classification as the committee in charge of the demonstration may arrange for, in order that machines of equal power or pulling an equal number of plow bottoms to a certain depth will be on demonstration to the farmers at certain stated periods. The demonstration will extend over a period of three days, each day to be given over to a certain classification of tractors, in order to keep demonstrations concentrated by related groups. If a farmer should be interested in one group and not so much in the others, by consulting the schedule he can plan his time of attendance accordingly, without losing much time from his work.

Following this plan, it appeals to me that it should afford an opportunity to the farmers of the State to secure much valuable information at first hand, without much expense in time or money. From the performance of the various makes of tractors he is free to draw his own conclusions, unbiased by the opinion of judges, as to the equipment that best seems to suit his needs.

This is an opportunity that farmers interested in traction farming should not miss. He who attends will not have to take anybody's word about the performance or non-performance of any type. From the demonstration he will be better able to draw his own conclusions.

F. L. PETERSON,
Division of Farm Mechanics,
University of California.

Draw Bar Pull of Tractors

By G. A. Smith

TENS of thousands of dollars in time and money have been spent by different manufacturers in developing a traction engine which will be commercial in its practicability for general farm use. It has been found that the large tractors having 60 to 100 h. p. engines have been successful on large ranches, and that the work has been accomplished more satisfactorily and cheaper than with horses. But it has been found that the large machine cannot always be used as a general utility machine, particularly on small farms, on account of its size and weight, and the public is now demanding and has demanded for the past two or three years a machine which will take the place of six or eight animals, or even ten animals as a maximum, but in this machine they demand something which will actually take the place in draw bar pull of the stock it replaces, an engine which can be satisfactorily used for stationary work, a machine which can be used for general plowing or cultivating orchards, vineyards, etc., or for hauling in the field or on the road, and in spare time be used as a stationary engine for pumping, sawing wood, cutting feed, or any other thing the rancher may find for it to do. They demand that this machine shall turn easily, shall work equally successful in sandy or wet soils, and, more than this, they demand a machine which actually replaces the number of horses it is supposed to, and continue in daily practical and continuous operation under such conditions without heavy maintenance or upkeep costs.

This brings us to the question of wondering what is the relation between the engine and this particular continuous every day draw-bar horse power pull which is actually to take the place of a certain number of animals it replaces. A tractor, to be correctly rated, should have sufficient engine power to pull its load up a reasonable incline, to have power so that in a pinch, on the turn, it will be able to carry its load.

The old way of rating the large tractors at half, or even a little better, of their engine power as the horse power pull at the draw-bar has been proven by the small tractor to be incorrect, because we will suppose a 60 to 65 h. p. engine on a tractor giving under the old ratings a 30 horse draw bar pull, we find that it did actually take the place of 25 to 30 horses, providing these animals were strung out in one team, and the tractor worked under the favorable conditions of a similar load continuously, the reason for this being that it is impossible to gauge the ultimate pull of a team of 24 to 30 horses all stung out at one time and probably being that 25 or 30 horses strung out only equal the pull of perhaps 18. Custom, however, has taught us to say that a certain size harvester or a certain number of plows take 18, 20 or 25 horse power, as the case may be, without any real knowledge except a thoretical one of what a team of this size actually did pull, and it was found that half the engine horse pull of a tractor did average about the horse pull of a large team of that size.

The rancher knows what he can do with an eight horse team, knows just what it will pull, and finds that he can get the maximum pull out of each animal in a team of this size. There is no guess about what an eight horse team will do, and we find that taking the average eight horse team it will pull along steadily equal to the strain of so many pounds dynamometer test, and that when it has to get down to pull up grade or in a pinch it can pull equal to so many pounds dynamometer pull, which is equal to fifteen horses in an ordinary pull—that is, providing the fifteen horses were strung out in one team. The question is, should the commercial tractor be rated at this maximum or ultimate pull of an eight horse team or should it be rated at the actual pull an eight horse team can do day in and day out without being overstrained.

Another thing must be taken into consideration in regard to tractor pull. Every time we put our foot down in wet or in sandy ground our weight sinking the foot in the ground creates a depression which when we pull our foot out creates a suction. This is true with animals. It is also true with tractors. A man or horse walking along level sandy or wet ground has to rest every now and then in order to recuperate and restore the energy lost in his first efforts, but his energy recuperated the man or horse is able to go ahead with renewed vigor for a short time until he rests again. This condition is not true of a tractor's transmittive power, because the engine only applies a certain amount of energy to the transmittive power, forcing the transmittive power to continue at a certain speed. If the tractor is stopped this transmittive power has no possible way of recuperating or storing up the expended energy because it must depend upon the engine to deliver this power to it, and this cannot be delivered until the transmittive power is in movement. It can, therefore, readily be seen that a tractor must be built so that it can transmit its maximum transmittive power without resting to store up energy for a limited period of time.

We say here that even this actual rated daily horse power pull should have a margin of safety. For example, we buy a gas engine or an electric motor or any other power apparatus which is sold to us at a certain horse power with a guarantee that it has been tested out at its factory at 10 per cent over its rated horse power. This extra allowance of horse power as a factor of safety in the engine or motor is given because the manufacturer knows that for his machine to stand up without excessive repair costs he must give himself a factor of safety at its normal operation. The buyer of a tractor should look for this factor of safety in the machine he buys.

Programme of Tractor Demonstrations

A GENERAL programme of the tractor demonstrations that will to be held at Fresno, February 19, 20 and 21, has been arranged as follows:

THURSDAY, FEBRUARY 19.

Forenoon—Assembly demonstrations of the large and heavy tractors.
Assembly demonstrations of the orchard and vineyard tractors.
Afternoon—Private demonstrations of all classes of tractors.

FRIDAY, FEBRUARY 20.

Forenoon—Private demonstrations of all classes of tractors.
Afternoon—Demonstration of orchard and vineyard tractors in actual work in vineyards and orchards.

SATURDAY, FEBRUARY 21.

Forenoon—Private demonstrations of all classes of tractors.
Afternoon—Demonstrations of actual farm work by the large classes of tractors.

The demonstrations will all be under actual working conditions and will be supervised by Professor F. L. Peterson, head of the division of farm mechanics of the agricultural department of the University of California; a practical farmer of the San Joaquin valley and a representative of "Orchard and Farm."

A tract of land convenient to the electric car lines and close to Fresno has been arranged for on which the tests will be made.

Lunches will be furnished on the grounds and other conveniences will be provided.

The tractor manufacturers and their representatives have selected the Hotel Fresno for their headquarters.

With the Farm Scientists

"LEMONS which have been frosted should be thawed gradually, as the injury then will be much less than if the fruit is allowed to remain where it will thaw out rapidly." This is the conclusion which has been reached by the experts of the Department of Agriculture as a result of tests made in Southern California. Samples of this fruit were compared each week for several months with unfrozen lemons stored under the same conditions for the same length of time and with fruit which had been left on the trees in the frosted grove. In appearance, taste, weight, acidity and quantity of juice, a large proportion of the frosted lemons which were picked and stored where they thawed gradually compared well with the unfrozen fruit. That which was left on the trees lost juice rapidly and decreased in specific gravity and general appearance, due to an ever increasing thickness of the skin and to puffy hollow centers.

ONLY 27 per cent of the tillable land of the United States is actually under cultivation, according to estimates of the Department of Agriculture, based upon reports of 35,000 correspondents. These reports were obtained in order to gain information as to the tillable area of the United States, the amount of land that cannot be used for crops that have to be plowed, but available for pasture or fruits, and the total number of acres that never can be used for agricultural purposes.

In other words, for every 100 acres that are now tilled, about 375 acres may be tilled when the country is fully developed.

THE average life of horses and automobiles may be increased and the cost of hauling reduced, according to the Office of Roads of the Department of Agriculture, by relocating many old roads and the more scientific laying out of new ones. The natural tendency in road building is to build a straight road, whether it goes over steep grades or hills, or not, and pulling over these grades naturally adds to the wear and tear on horses and vehicles. The doctrine of the Office of Roads is that the longest way around may often be the shortest and most economical way home, and that frequently by building a highway around a hill or grade, even at the expense of some tillable land, but little appreciable distance is added and this is more than offset by the reduced strain of hauling.

Officials of the Office of Public Roads point out that the running of a road and the resulting traffic through a farm, where there are good sheep, cattle, horses, grain, fruit or vegetables, has a certain advertising value, and in many instances makes the land more valuable. In other cases, the importance of such a level road to the community is so great that it might well repay those using the road to give the farmer the equivalent in land equally good in place of what he has sacrificed to the common welfare.

AN experiment made recently by the Utah station calls attention to the importance of thinning the fruit as a means of producing the maximum number of first-class apples. Eight-year-old Ben Davis trees with the fruit thinned to a minimum distance of 4 inches apart gave a net increase per tree of $1.16 as compared with unthinned fruit. The Jonathans showed a net increase of 30 cents per tree. The same Jonathan trees thinned in the same manner in 1912 gave a net increase of 71 cents per tree over unthinned trees. In practice the cost of thinning appears to be offset by the reduced cost of sorting when the fruit is packed.

THERE are many people who question the value of the boys and girls' clubs that have been established by the Department of Agriculture, some claiming that the movement is nothing more than a fad and is productive of little good. Officials of the Bureau of Plant Industry state that these clubs are performing the function for which they were established. They were organized as an outlet for activities of boys who wished to become demonstrators of better methods of farming, to encourage more boys and girls to become actively interested in the practical side of farm and home problems, to create a wholesome co-operation among members of the family and the clubs, and to furnish teachers the connecting link between practical agriculture and home economics and the school.

How well Dr. S. A. Knapp, the founder of the movement, builded is shown by the fact that the clubs are arousing a spirit of wholesome co-operation among members of the family in the home. The boys are assisting the father to provide a supply of bread and meat on the farm, and the girls are aiding the mother to fill the pantry with fruits and vegetables which have hitherto gone to waste.

THE Secretary of Agriculture has appointed a committee "to conduct a general inquiry into the various factors which have brought about the present unsatisfactory conditions with respect to meat production in the United States, especially in reference to beef, with a view to suggesting possible methods for improvement." The work of the committee will be centered largely on the study of economic questions involved in the production, transportation, slaughter and marketing of meat. As the first step the committee will investigate carefully the changes within the last two or three decades which have increased cost of production and the centralizing of the meat industry. Among the important considerations to be gone into will be the taking up of the public lands, the effect of the capacity of the range, especially on the remaining public lands and forest reserves with a view to suggesting changes in the laws to make the public lands of greater use in cattle raising.

A National Crime--Neglect of Farm Machinery

By G. F. Paul

A FARMER invests an even $1,000 in a slick new automobile. He gives his new beauty just as much care as he would to a prize-winning colt or a blue-ribbon pen of chickens.

The same farmer may invest hundreds of dollars in farm machinery, pull it home, use it for a few weeks to harvest his valuable crops and then desert it, leaving the winds, the rains and the snows to hammer it gradually to pieces, while the automobile stands in the perfect shelter of an air-tight garage.

The riding plows, cultivators, drills, corn planters, hayrakes, mowers and binders are the real workers on the farm, and yet they are all too often shoved unceremoniously out in the storm to make room for the top buggy or the automobile. These valuable machines are often left out in the open through sheer carelessness, and then what happens? The fall rains come and the metal parts begin at once to rust. The cold weather soon follows and the paint begins to crack and peel off. By the next spring each individual machine has lost an alarming percentage in efficiency. Its value is materially reduced. Its life is considerably shortened.

It may be that the farmer will try to make up for this neglect by a vigorous use of the oil can, but often he will find that his neglect has cost him a pretty penny. He may even make the resolve that he will never again allow his expensive machinery to stand out in the open, in the shelter of a tree, in a leaky shed, an open shed, a poorly drained shed or in a combined machine shed and hen roost.

If he has the time and sufficient inclination he will set about building a machine shed that will combine economy with convenience. Before starting work on it he will decide that it should be in a handy place, so teams starting out for the fields would pass by it, that it should be perfectly dry and protected from improper drainage, that it must in turn protect against sun, wind and moisture and must not cost too much.

If he builds a two-story shed 20x30 feet he will be able to store on the first floor a riding plow, two cultivators, binder, mower, grindstone, hayrake, grain drill, two smoothing harrows, a slip scraper and a lister, besides some smaller tools. Besides, he will have plenty of room for a set of carpenter and blacksmith tools, so as to do repair work in the shed. On the second floor he can store a hay tedder if he takes it apart, several light tools, stoves not in use, some household goods and many other articles. In other words, such a shed as this is plenty large enough for the implements on a quarter-section farm, provided there is room enough in some other building for storing the wagon and buggy.

It has been declared that at least one-half of "good care" consists in keeping the machinery properly repaired, in good adjustment and thoroughly oiled when in use. It is very evident that more farmers give machinery good care when in use than properly care for it when not in use. However, the life of farm machinery depends largely upon the owner himself. A man may house his machinery all right when it is not in use, but he may give it very poor care when he is using it. It is very easy to see what will be the outcome of such a policy.

During a recent investigation of this subject in northern Indiana, out of a total of fifty-five farms inspected it was found that twenty-four, or nearly one-half, had no shelters worthy the name of machine sheds, that eight of the shelters were in a very poor state of repair and that the remaining twenty-three cared only fairly well for the machinery on the farms. These farmers were not of what would be called the shiftless type. They were rather of the kind of men who prefer to bunch what machinery they can in the driveways of the corncribs or the barn and allow the other machines to shift for themselves as best they can.

Nothing detracts more from the general appearance of a farm than a dilapidated binder or hay-loader standing in a state of utter ruin with the weeds growing high around it and the chickens making it a convenient roosting place. If the machines are useless why not at least kill two birds with one stone by sending them off to the junk pile instead of allowing them to stand around as a striking monument to neglect and shiftlessness?

The modern farmer must watch his machines as he would his work horses and give them the care and shelter that they deserve.

A striking illustration of combined thrift and neglect.

Convenient machine shed and feeding stalls.

The Farm Tool Chest

THE following tools should be found in every farmer's workshop:

One-tenth tooth cross-cut handsaw.
One quarter half ripsaw.
One set firmer chisels, ¼ to 1¼ inches, by eighths.
One jack plane.
One fore plane.
One smooth plane.
One draw knife.
One hammer.
One nail set.
One carpenter's square.
One try square.
One two-foot folding rule.
One tool grinder.

There are many other tools, not included in this list, that are handy and useful, but with those given all ordinary repairs to buildings may be made.

The cost of these tools is not great, and will soon be saved over the cost of repairing by a carpenter.

Repairs to buildings should be made just as soon as the necessity for them is discovered. If a repair is postponed for a more convenient time, in a great many cases that time never comes, and in other cases the cost will be greatly increased.

Repairing increases both the appearance of buildings and their life.

Keeping everything in good repair, such as buildings, fences, machinery, ditches, etc., is the work of a prosperous farmer.

With the tools listed here at hand the farmer can make repairs quickly and at a very small cost.

Moist Subsoil

The condition of the subsoil has a very important bearing upon the downward movement of water. In a dry soil the natural precipitation moves downward very slowly and the majority of the moisture will be stored near the surface where the loss of water by evaporation goes on the most rapidly. When the subsoil is moist the water moves more freely and goes to greater depths. Investigations at Utah show that when desert land is broken for cropping purposes the precipitation penetrates farther and farther into the soil with each year of cultivation. This is due largely to the loosening of the top soil, and as the lower layers become moist the water is enabled to slide down more easily to greater depths.

This is a very important principle for the dry farmer to understand, as he can take the necessary precautions to keep his soil from getting very dry below the first foot. If a soil does become extremely dry it should be summer tilled without cropping so as to get the subsoil into a moist condition.

Danger of Loose Wire

Don't leave any loose wires lying around the farm anywhere, especially where the colts and horses run. It only takes two seconds to knock a hundred dollars off the value of the horse.

Quarters for Hogs

Never compel hogs to sleep in straw stacks, manure piles or any place where they will come out steaming and sneezing in the morning.

Crop Conditions All Over California

The reports of the crop conditions, as published in the accompanying article, are made by the various County Horticultural Commissioners to "Orchard and Farm." They were sent in during the last few days of the month of January and are absolutely reliable. Reports are also made on the livestock conditions.

BUTTE COUNTY, Earle Mills.—At least 25 per cent of the oranges that were left unpicked at the time of the big storm at the first of the month were badly scarred.

Nearly 90 per cent of the new planting of fruit trees, thus far received, have been prunes. This is quite a change from the heavy almond plantings of last season. The usual acreage will be planted to cereals as soon as weather conditions permit.

Live stock has fallen off in numbers in the last few years, but there has been a decided improvement in the quality.

KINGS COUNTY, B. V. Sharp.—This promises to be a bumper year. Fruit trees look fine and fruit buds are plentiful and healthy. Grain crops will be large and there will be extensive plantings of fruit trees.

Farmers are increasing their herds of live stock and are breeding up their animals.

LOS ANGELES COUNTY, William Wood.—The condition of citrus fruit is excellent. The fruit has improved in size and appearance very much during the last month, owing to favorable weather conditions. Shall have nearly, if not quite, a full crop of oranges throughout Southern California, and lemons probably better than one-third of a crop. The quality of the oranges is especially good also, smooth, thin skinned and unusually sweet.

An unusually large acreage of grain for this period of the season is being sown, owing to good conditions of soil and promise of a favorable season. In many instances the grain is coming up and looks fine. Prospects never better for a large grain crop.

The livestock industry of Los Angeles county is mostly confined to the area north of the Sierra Madre mountains, except the dairy industry about the city. Conditions were never better for livestock interests for the time of year. A plentiful supply of green feed is available all over the county, owing to our early rains and warm weather. The warm weather is favorable also for the health of the stock. Dairying interests are advancing somewhat, as the market here is excellent for dairy products.

There is a large supply of citrus nursery stock throughout the county. Deciduous nursery stock is also in good supply and good condition. A good many orchards will be planted this year, and indications are good for their getting a fine start. They should all make good orchards if location is right.

The orange trees injured by frost a year ago have recovered to a surprising degree, and the crop this year is very gratifying. The lmon trees were in many cases injured as well as the fruit, which necessitated cutting back the tops to a considerable extent, but the growth in the past year has been unexcelled, and the crop has set well on all of the old wood which remained.

MONTEREY COUNTY, J. B. Hickman.—Warm weather has hurried blossoms in the Aromas section. Almonds and cherry buds are swelling and occasional blossoms are seen. Grain and feed crops are well started. In the Aromas, Cameros and San Miguel districts about 15,000 deciduous trees have been received and more are ordered. Plantings will be heavy.

MERCED COUNTY, N. H. Wilson.—Large shipments of fruit trees are coming into the county. Figs, peaches and olives predominate. There will be a large acreage planted this year. Vines, mostly Malagas and Thompsons, are coming in gradually and the vineyard acreage will be materially increased.

All range cattle are doing well. There is plenty of feed. Cattle men are bringing in feeders from other States. Dairy men are greatly improving their herds and the results are noticeable. Sheep and hog breeders are seeking better stock.

NAPA COUNTY, A. D. Butler.—Conditions are most favorable for a bumper crop in 1914. All crops are looking well and there will be a big acreage for the harvester.

NEVADA COUNTY, D. F. Norton.—All deciduous fruit trees show an immensely heavy crop of fruit buds, which gives promise of a bountiful crop for the coming year. The greater part of the citrus fruit crop is in the market. It is of excellent quality. The citrus trees in this section are free from pests and fungous diseases and clean fruit is the result. Winter vegetables are in good condition. All early sown grain is looking well. There has been an abundance of rain and very little frost. This looks well for a big crop. Stock is in good pasture. The number of animals has not increased appreciably in the last few years, but there has been a big improvement in the quality. There is still plenty of room for improvement.

The planting of deciduous fruits will be the greatest in the history of the county. Bartlett pears will lead with apples, plums and peaches following. A big acreage will be set to walnuts, with the Franquette and the Eureka varieties predominating. Several acres will be planted to Rochester and American Sweet chestnuts. Some oranges and olives will be planted.

ORANGE COUNTY, Roy K. Bishop.—There is an extension of apricot planting in this county.

Citrus fruits are in fine condition. Lemons have set a very fine crop. Just what the extent of new planting of citrus will be cannot be told at this date.

Celery, bellpeppers, string beans and peas are in fine condition.

Plowing and seeding of grains is progressing. The prospects now are for a fine yield.

Live stock is limited in production in this county. It is confined to foothill pastures. It is being extended. There is a gradual improvement in quality and size of horses and mules for farm work. Former producers of sheep have gone into the cattle business.

There has been but three light frosts this season. There have been no winds. The rainfall has been satisfactory and ample to date.

PLACER COUNTY, H. H. Bowman.—Despite the fact that we are having more rainy days than usual and consequently a shorter planting season there will be at least 800 acres of deciduous fruit trees planted. The list includes peaches 25 per cent, pears 25 per cent, plums 40 per cent and cherries 10 per cent. Several orchardists have experimented with cover crops this season and they are making a good growth. Buds on fruit trees are plentiful and they are not abnormally advanced. All oranges and olives have gone into market. There is every indication of an abundant crop for 1914.

SACRAMENTO COUNTY, F. R. Bloomer.—Pruning is well advanced on deciduous trees. The orchards, as a general rule, were irrigated last summer, and this combined with the abundant rains this winter has developed large thrifty buds. There has been a heavy planting of pears and peaches.

Less than 2 per cent of the citrus fruits remain in the groves. The season has been a profitable one for the growers of this fruit. Thousands of nursery orange trees will be planted this spring. The pruning of grapes is about half completed. There will be some planting of vineyards near Florin. Berries are looking well. The acreage will be increased particularly in the Florin and Perkins sections. Vegetables are being marketed steadily and bringing good profits.

The acreage planted to cereals will be the largest in the history of the county.

A slight increase in the number of live stock is reported. This is due mainly to the fact that farmers will not sell calves to butchers.

SANTA BARBARA COUNTY, C. W. Beers.—Deciduous fruit tree stock for widely extending the acreage is being received. Sections not heretofore given to commercial growing of fruits are being set out. The early rains will enable many citrus growers, who have held back for the past year from enlarging their orchards, to add to the acreage under good cropping conditions.

Possibly a much larger acreage will be sown to lima beans. The soil is in excellent condition.

SONOMA COUNTY, A. R. Galloway.—The great quantities of nursery stock shipped into the county, together with the considerable amount of home grown stock, indicates a large planting this season. The tendency is strongly toward the prune, as more prune trees have been inspected than all other kinds together. Citrus fruits look well. The crop is normal and the quality excellent. The planting of vines will not be as heavy as usual. Owing to the great rains, grain is not looking well on much of the low lands, but it may come out later.

There is very little increase noticeable in the number of live stock in the county, but the quality has much improved in the last few years.

YUBA COUNTY, G. W. Harney.—The situation is very promising for all varieties of citrus fruits, grapes, berries and vegetables. Farmers are taking advantage of weather opportunities and are seeding grain whenever possible. There will be a large acreage to cereals. Feed for live stock is better than for several years. All calves will be raised to maturity. Up to the middle of January 11,527 deciduous fruit trees had been passed for planting. These are in addition to 1,000 vines and 1,200 berry plants.

SHASTA COUNTY, George A. Lamiman.—All varieties of deciduous fruits are well set with fruit buds and look well. Pruning is well under way and some spraying has been done. There have been about 20,000 trees and vines shipped into the county for the season, a large percentage being olive trees. There will be quite a large planting of deciduous trees. Early peaches will be planted in the Happy Valley district, as they do exceedingly well there and command good prices in the early markets. French prunes will also be largely planted in the Anderson district, with apples going to the mountain sections. There are a good many thousand strawberries being planted this season, Marshall being the principal variety.

Grain, which was early sown, got a good start before the cold storms set in and is doing well. This section is growing quite an acreage of corn each year, which is quite profitable.

The dairy interests have been the means of bringing in a decided improvement in milk cows and the new creamery at Anderson has been a success from the start. There is a good demand for its products and another year will see a large increase in the output.

STANISLAUS COUNTY, A. L. Rutherford.—A great many walnuts are being planted, but the movement in deciduous trees, especially peaches, apricots and plums is small. In fact, some peach and apricot orchards are being pulled out. All orchards are in excellent condition. Buds have set well and there is every indication of a good crop. A number of vineyards are being pulled out and the land seeded to grain. There will be a big acreage in cereals and a good crop is promised. A good many dairy cows are being shipped out of the county, more than are coming in.

YOLO COUNTY, G. W. Hicks.—Abundant rains promise one of the best years in the raising of barley and wheat. A larger acreage than usual is sown and the stand is excellent. If spring opens up favorably the alfalfa acreage will be materially increased.

VENTURA COUNTY, R. S. Vaile.—The crop prospects are better than for a number of years. The rainfall so far has been a trifle above normal and has come in well distributed, gentle, warm showers, which have left orchards and fields in excellent condition.

The hay crop is practically all planted and much of it is already up.

Much of our beet acreage has already been planted and some of it is almost ready for thinning. Despite the lowering of prices of beets, there will be a normal acreage planted this year.

The bean farmers feel that their fields will be left in exceptionally good condition because of the nature and distribution of the rainfall. If the season continues favorably we should have a bumper crop. As this crop averages in returns to the farmers, nearly $2,500,000, it is one of the most important industries.

The live stock industry in Ventura county is not a large one with the exception of sheep. This is just about holding its own in recent years.

I estimate that there will be 1,000 acres of deciduous trees, mostly apricots, planted in the county this season, 1,500 acres of lemons, 500 acres of oranges and 500 acres of walnuts.

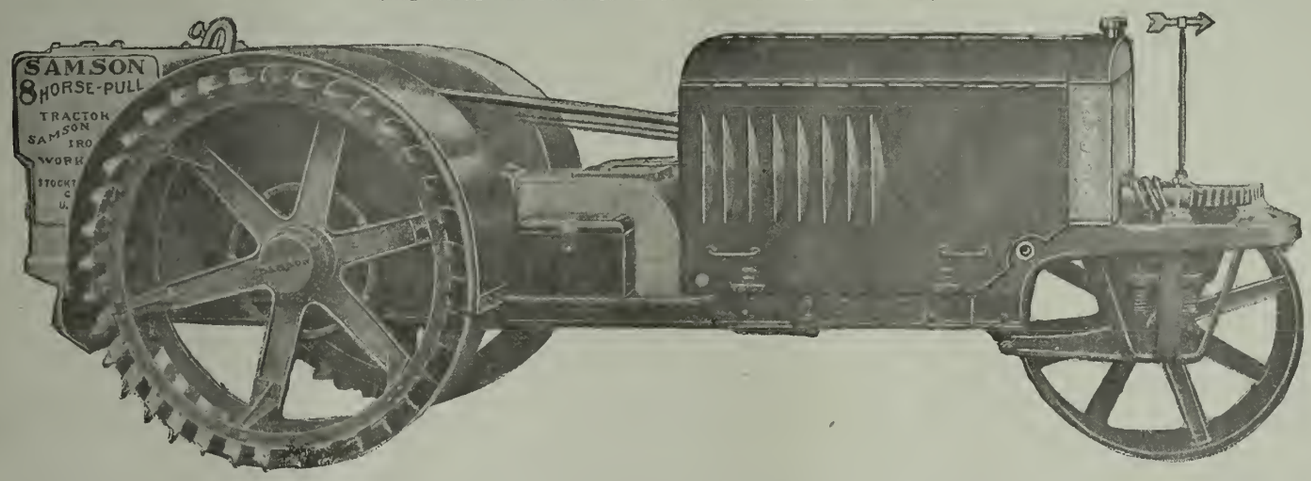
HUMBOLDT COUNTY, Geo. B. Weatherby.—A large acreage will be set out to fruit. Walnuts are being interplanted in some sections with apples, pears and peaches. The dairy industry is increasing and the quality of the cows is improving. Cow testing associations have had much to do with the improvement. They have stimulated interest and clearly demonstrated the advisability of keeping only the high-grade cow.

THE STRENGTH OF SAMSON TRADE MARK IN EVERY PART

SAMSON SIEVE-GRIP TRACTOR

(4-Cylinder Engine)

(Registered and Patented in U. S. and Foreign Countries.)



FOR ORCHARD AND VINEYARD AND GENERAL FARM WORK

DESIGNED for an 8-horse draw bar pull with surplus power to pull its load up any reasonable grade or in a pinch, or used as a stationary engine for any class of work requiring up to 25-30 H. P.

SIEVE-GRIP WHEELS DO NOT SLIP IN WET OR SANDY SOIL

ENGINE AND TRANSMISSION COMPLETELY PROTECTED FROM DUST AND DIRT

Removable smooth steel tires are furnished for HAULING over good roads.

SPECIFICATIONS

TRACTOR.

LENGTH OF TRACTOR—12 feet, 5 inches.
WIDTH OF TRACTOR—60 inches.
HIGHEST PART ABOVE GROUND—50 inches.
TRACTION WHEELS—Diameter, 48 inches.
FRONT WHEEL—Diameter, 32 inches; 12 inches wide. Has 3 guide rings.
FRAME—I-beams and crucible steel.
TRANSMISSION—Vanadium steel gears, enclosed and running in oil.
DRIVE—Floating axle with hub drive to crucible steel traction wheels.
SPEEDS—Two ahead and two reverse, 2 miles and 4 miles per hour. Can be varied with speed of engine.
CLUTCH—Samson improved marine; double expansion; runs in oil.
LEVERS—Two, one for gear shift, one for go ahead and reverse.
BRAKES—Independent foot brake for each traction wheel for making short turns.
PULLEY—20-inch diameter, 8-inch crown face, 1⅞-inch bore. Speed, 250 to 300 r. p. m.
WEIGHT OF TRACTOR—7,500 pounds.

POWER PLANT.

ENGINE—Samson four-cylinder L-Head Tractor Type, four cycle.
CYLINDERS—5-inch bore by 7-inch stroke.
CRANK SHAFT—Diameter, 2½ inches, 1-inch offset.
CRANK PIN—Diameter, 2½ inches by 2¾ inches.
FIVE CRANK SHAFT BEARINGS—Total combined width, 17 inches.
PISTON PIN—1 15-16-inch diameter and hollow. Three oiling methods to piston pin.
VALVES—Inlet and exhaust are mechanically operated. (Valves are lifted plumb, without side strain, and are enclosed.)
VALVE CHAMBERS—Water jacketed and provided with caps for easy access to valves.
CLEANING PLUGS—In center of cylinder heads, easily removed.
ENGINE SPEED—525 to 575 r. p. m.
BRAKE HORSE POWER—25 to 30.
IGNITION—High-tension magneto mounted on engine.
CARBURETER—Has no moving parts.
PUMP—Rotary. (Bronze.)
RADIATOR—Tubular, with fan.
LUBRICATION—Mechanically operated force feed oiler, with tubes leading to each part to be lubricated.
FUEL—Engine distillate. Fitted to use kerosene, when ordered.

WRITE FOR CATALOGUE O. A.

SAMSON IRON WORKS, Stockton, California

"A Stitch in Time Saves Nine"

An Old and a True Saying

Here is a good illustration to prove it: A farmer found his soil was producing less each year. He worked as hard, plowed, harrowed, cultivated, irrigated, all at the proper time; tended as carefully as ever, but the crop was less.

He then realized that the soil was wearing out; that labor and water alone wouldn't bring as good crops as before. He feared that it was wasting, that it was exhausted, that it was no longer fertile.

He didn't whine about the matter, but cast about to seek a remedy, the same as he would if a horse were taken sick and was no longer able to work.

The farmer learned that soils need refreshing, like his team, which must be replaced by younger horses when the older ones give out; that the soil is composed of two things: organic matter—that is, organisms containing life—and inorganic matter.

He found out that to make crops grow, the organic matter in the soil must be kept fully alive, else the result would be a failure, or partly so.

He also found out that it would cost far less to keep those soil organisms alive than it would to try to resurrect them after they were dead.

If you will write to us for the booklet, "Feed the Soil That Feeds You," it will be promptly mailed, free. It explains that fertilizing is an investment, not an expense.

WESTERN MEAT CO.

703 Townsend Street
San Francisco

Clearing Stump Land With A Monarch Steel Stump Puller

Is Easy Work and Profitable

Because the Monarch is built of steel. Every part well made and finished. GUARANTEED FOR 6 YEARS. Has many improvements not found on others which make the steel Monarch easy to operate. Guaranteed 700 H. P. The Mighty Monarch has satisfied everyone for 20 years.

PULLS STUMPS UP TO 7 ft. IN DIAMETER

No stump too small. None too large. Our New Triple and Double Power Machines clear 1 to 5 acres per day. Write for free catalog, price list and full particulars about the Mighty Monarch, the ONLY stump puller in the world guaranteed for 6 YEARS.

Zimmerman Steel Co., Dept. O F Lone Tree, Iowa

Work for 1914

By G. W. Harney

THERE are three important subjects affecting horticulturists and, in fact, general farming in California at the present time: the need of co-operation among the growers, new methods in farm work and the growing of exhibits for the San Francisco International Exposition.

Growers in every line must get together. They should commence this winter and use the rural school houses or churches for weekly or semi-weekly meetings; organize formal associations and get ready to stand together in all questions affecting their business as a whole. United they will be able to make a profit in their business; divided they will be exploited by the great buyers' organizations in green fruit, in dried fruit, in canning fruit, in livestock and in cereals.

Here we are, coming into a season that, it has already been predicted, will be perhaps the greatest in the way of production in the history of the State. If the farmers remain unorganized they will get nothing above cost for their crops. Buyers' organizations will raise the cry of overproduction and fix prices accordingly, well knowing that it is not the quantity of any crop grown in California that fixes prices but world demand and world consumption. The Government is doing all it can in the way of quick dissemination of world crop statistics; organized buyers have facilities for studying such information; why should not the growers form a local co-operative business association? The help that each grower will derive from membership in such local associations will be simply enormous.

New methods in farming must be adopted and there are so many that the mention of one may serve to induce horticulturists to make further study. A new idea in spraying operations for stimulating fruit buds consists of adding a fertilizing solvent to any ordinary spray solution. One pound of nitrate of soda to the diluted gallon of spray wash was used by some fruit growers in this vicinity with excellent results last season and a large number are now spraying with nitrate of soda added to the spray material.

Extra fine specimens of all horticultural, vegetable and cereal products must be grown this year, 1914, for the county exhibits that must be ready for display in February, 1915, at the San Francisco Panama-Pacific International Exposition. All the counties in the State have raised really enormous sums for the collection and display of their products. Now is the time for the growers to make ready to win a part of this money. County Exposition Commissions and Boards of Supervisors expect to pay good round sums for extra fine products. The common things, as pumpkins, squashes, potatoes, cabbages, turnips, carrots, all the deciduous and citrus fruits, alfalfa, etc., strange as it may seem, will be the most attractive exhibits in the California State building at the Exposition, providing they are of large size and fine clean specimens. To grow these fine specimens select extra fine locations. Get the soil analyzed so that if it is deficient in any way, quick acting fertilizers may be applied. Study up on pruning, thinning and the best forcing and growing practices, and go in to get a lot of the finest specimens of any sort you ever did grow. The most attractive county exhibit at the coming exposition will be that one that shows the natural products and that does not depend on jars of processed products.

In 1915 there will develop a rivalry for show stuff that will make every fine large specimen worth its weight in radium.

There's no system equal to the **KOPPEL.** It is the quickest and most economical way known to handle dried fruit. Our

NEW BOOKLET

goes into detail and explains why it will be to your advantage to use this money-saving system. No charge. Write **NOW.** Address

ORENSTEIN-ARTHUR KOPPEL CO.

Los Angeles: 120 South Los Angeles Street — San Francisco: 231 Rialto Bldg.

Honest Nursery Stock

means more than merely a live tree or plant. It means more than a good root or a good top. It means nursery goods with the best efforts, best knowledge and best brains of the grower back of it, to insure the planter highest results. Our stock is that kind. We stand and are known for **quality in Nursery Stock** and for **service to our customers.**

Our specialties are Deciduous Trees, Fig Trees, Grape Vines and Hardy Ornamentals.

Complete descriptive catalogue sent you for the asking.

The FRESNO NURSERY CO. INC.

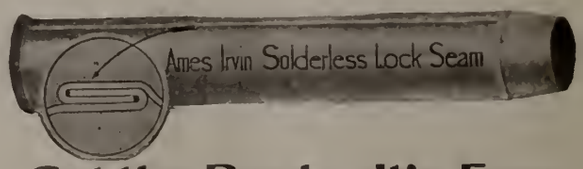
HONEST · NURSERY · STOCK

1824 Tulare St., Fresno, Cal.

The Practical Story of Farm Irrigation

In some cases as high as 64% of your water per mile for irrigation is lost through seepage. Added to this the loss through evaporation. Each gallon lost represents a loss of money through the futile power expended. If you buy your water the loss in money is even more direct. Too much money is wasted in irrigation ditches—they cost too much to maintain; they consume too much soil area; they are too expensive to install. The cost of water for irrigation has risen 300% since 1902.

Irrigation pipe costs but little. The cost of installation is low; no seepage or evaporation is possible; the mantainance is nil; no grading of land is necessary, as it conveys water on uneven land as well as level land.



Get the Book. It's Free

All these are facts contained in greater detail in our free book about irrigation; its value and problems, how to use it and where. There also will be found vital information about water—the importance of water—its functions—capillary attraction—seepage—when to irrigate—where not to irrigate.

It tells about the difference in irrigation pipes—why Ames-Irvin Lock seam pipe is constructed without rivets or solder. Why and how the best results have been produced by it. Send for it to-day. A postcard addressed to Department O. F. will bring it.

AMES-IRVIN COMPANY

8TH AND IRWIN STREETS, - - SAN FRANCISCO, CAL.

Doctoring Stock

By Lemuel Fraser

WHEN I was a boy, there was nothing I dreaded more than to help give an animal a dose of medicine. No one seemed to know just how to go about it. The unfortunate beast was usually overcome by main strength, and the dose poured down its throat.

It is almost as important to know how to give an animal medicine as it is to know when it shall be given. I used to hold the drenching bottle, or the nose-twitch, and the general awkwardness usually caused the drenchers to get more of the drench on their persons and clothing than went down the throat of the horse.

A drenching bottle is a necessity around the barn. It should be a long and slender bottle, with a long and slender neck. Be sure it is thick enough so it will not be easily smashed in the accidents that may occur.

When drenching a horse, insert the mouth of the bottle as far back into the mouth as possible, getting it between the cheek and the back teeth. Have the head of the animal about level, so the fluid will run back into the throat. Be careful about pulling the horse's head too high. If this happens, he will be unable to swallow, and will strangle, blowing and coughing the mixture out through the mouth and nose.

In drenching cattle, grasp the cow around the neck, and grip the muzzle with one hand. Lift the muzzle slightly and thrust the bottle back between the cheek and the back teeth with the other hand. The cow cannot help swallowing if this is properly done.

Fighting Frost in the Citrus Belt

By P. L. Edwards.

THERE is now being waged a battle against nature by the citrus fruit growers of Southern California, the like of which has never been seen in orchards of this or any other country. The past month has brought a recurrence of frost conditions, threatening the destruction of the splendid crop of oranges and lemons rapidly nearing maturity. In this instance the ranchers were thoroughly organized and prepared for the fight and the result of this first fight of the season is a complete victory for the growers.

Growing out of the experiences and heavy losses from frost conditions of a year ago, there has crystallized about a worthy spirit of determination an organization and a system as unique as it bids fair to become effectual. In this first systematic effort to neutralize natural conditions by raising temperature above the danger point in an area of citrus orchards covering tens of thousands of acres, human ingenuity is again demonstrated.

Beginning just within the gates of a great city, the citrus belt of Southern California sweeps through the broad valleys protected by the high Sierra Madre range from Los Angeles nearly to the limits of San Diego on the south and east.

It is said on good authority that about $200,000,000 represent the value of Southern California's citrus orchards. The industry is, perhaps, the fairest of all her possessions. To save this industry from the threatened weather conditions is now the problem confronting a large proportion of the rural population of the south part of the State.

While smudging to neutralize frost conditions is by no means a new resort, the systematic and general resort to this means as now adopted in the citrus fruit belt, it is a spectacle of which the country outside of this area has no accurate conception. To begin with, the entire citrus belt is included in the fight being made and is divided into sections for convenience of handling. Each section has its organization and direct communication with the United States Weather Bureau. Its headquarters, located at a central point, is the point of communication with the orchardists. A patrol system much like policing is maintained whenever weather indications approach the hazardous line. At the headquarters five or six men with motorcycles are stationed all night for the purpose of visiting orchards within that particular district at stated times throughout the night. Whenever the temperature is reported as likely to drop below the freezing point in any district, by the weather bureau, a close watch is maintained at headquarters and the motorcycle patrol is sent out on a round of temperature-taking and reporting. These reports are brought in to the headquarters and charted and dated. Beginning about December 1 a careful record is kept through the critical season, about March 1. When the temperature falls below 30 each orchardist is warned to prepare for frost-fighting. While at 30 no real alarm is felt, if this temperature occurs early in the evening it indicates lower temperature in the hours of the morning. So the grower is warned by telephone from headquarters to enable him to be prepared for smudging. Of course, the orchardist has his smudging pots in readiness.

Blind Staggers

By F. L. Meecham

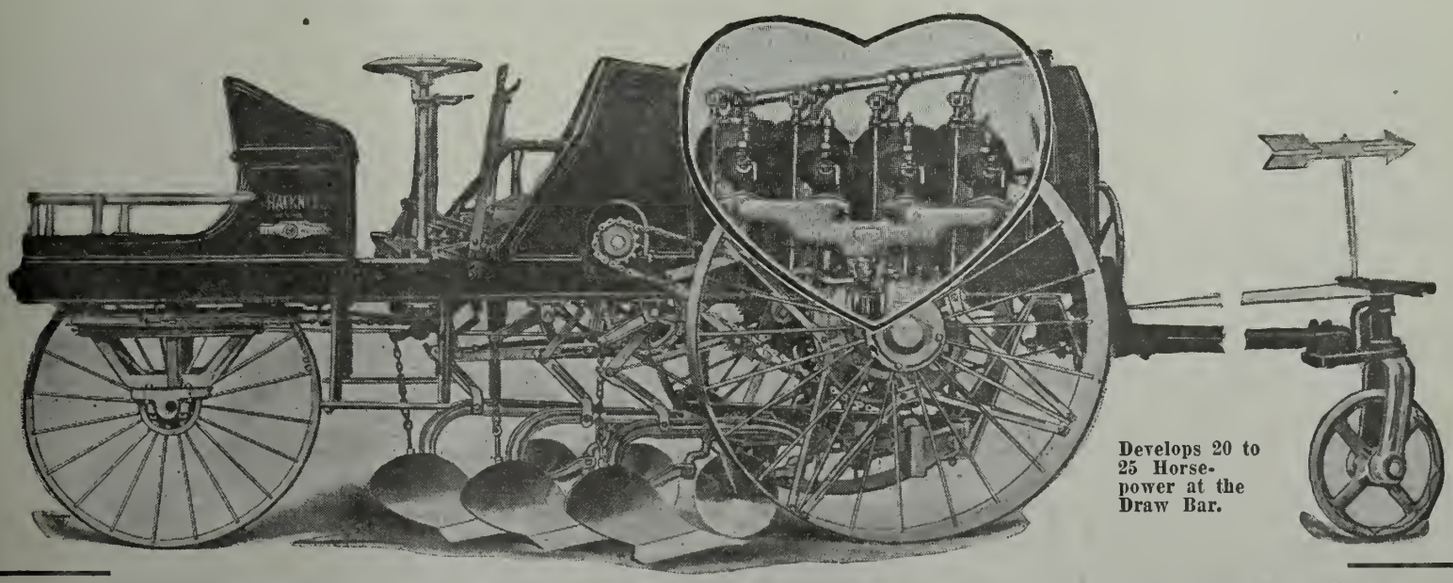
MOST veterinarians who have had any opportunity for study and investigation are of the opinion that blind staggers is caused by horses eating food of poor quality. This, too, is a popular belief among horse owners and seems borne out by investigations in several Western States.

Two or three years ago the experts in animal pathology in Kansas decided that moldy corn was responsible for several distinct outbreaks of the trouble. At any time when the corn is light and chaffy and is allowed to mold in the shocks or cribs from being cut or gathered too early, there is a certain danger in feeding it, especially to horses.

Blind staggers has caused the death of a good many hundred horses in the last two or three years. By some bad water is charged with much of the mortality. Until some specific organism is found, it is likely that blind staggers will remain a mysterious disease, as the theories now given to account for it are rather widely opposed.

The symptoms are easily recognized in the typical case. The horse is first apparently dazed and later is likely to become violent. If tied, there is every probability that he will strangle himself to death in his struggles. In the violent stages they dash into trees and collide with fences and stable walls, bruising themselves viciously.

Preventive measures should be taken. Where the disease has made its appearance it is the part of wisdom to look carefully after the food and the water. Dusty hay is considered dangerous and grain that is moldy ought not be fed to horses.



If You Buy Your Tractor With Care It Will be The

HACKNEY AUTO PLOW

Would you knowingly hire a man with a weak heart?

You should use care in buying a TRACTOR to be sure of a good **strong motor**, as the power plant of a tractor is the heart of the machine and success or failure in the use of traction power on your farm is almost entirely dependent upon the way the engine is constructed.

Buy a tractor that carries an engine that has been **designed and built by a tractor manufacturer for tractor purposes** with a slow speed heavy duty motor.

An automobile type of motor **will not stand** the constant pull and grind that a tractor is subject to. Remember, a tractor motor is under a constant strain from the time you drop your plows in the dirt until you lift them again.

The 1914 Hackney Tractor carries a **Hackney Motor**, designed and built by practical men with years of experience in tractor work.

The Hackney Motor has extra heavy cylinders, crank shaft case and base. Has connecting rods and bearings that are at least one-third heavier than those found in an automobile type of engine of the same rated H. P.; has a 2¼-inch crank shaft, and a force feed oiling system. By loosening one bolt operator can adjust any bearing in the motor or remove any one of the 4 pistons without crawling under the machine.

This **special motor**, combined with the **underslung plow** and special **two-way transmission**, is what makes the Hackney such a success.

It burns coal oil, distillate or gasoline.

Write me for further information or I will have my salesman call.

THE HACKNEY AUTO-PLOW THE ONE MAN OUTFIT LEADS

A. L. LAW
California State Sales Solicitor
1401 K Street, Sacramento, Cal.

Manufactured by
HACKNEY MFG. CO.
St. Paul, Minn.

THE HACKNEY AUTO-PLOW THE ONE MAN OUTFIT LEADS

Demonstration Extraordinary

OF PLOWING AND GENERAL FARM WORK BY THE POWERFUL, DISTILLATE-BURNING

In Sizes To Meet Your Power Needs.

OIL-PULL AND TOE-HOLD ORCHARD TRACTORS

At Prices To Suit Your Pocket Book

To Be Held on the BULLARD RANCH, FRESNO, CAL., FEBRUARY 19, 20, 21

You Are Invited.

RUMELY PRODUCTS COMPANY
SAN FRANCISCO.

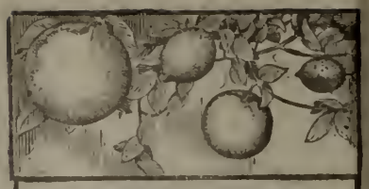
RUMELY PLOWING DISKING THRESHING REG. U.S. PAT. OFF.

Water Congress

THE Internal Waterways Congress, held in San Francisco January 15 to 17, set on foot a movement which is bound to be of great value to California—the development of water transportation throughout the interior of the State. The delegates were selected in ways to give all parts of the State as fair a representation as possible, and as a result the ideas of the congress were strongly agricultural. The majority figured on the way that internal water transportation would affect the farmer directly, and how indirectly, through irrigation, reclamation and otherwise. It was essentially a congress with the main idea to benefit agriculture.

It was decided in the congress to concentrate all efforts on the development of waterways, seeing, however, that irrigation received no injury. As a matter of fact, irrigation, reclamation and power development will be greatly aided through the work that this congress intends to do.

Agriculture will be greatly aided also through the building of a great system of canals and improvement of rivers, if such can be accomplished. Water transportation is far less expensive than rail and more satisfactory. The opening of the Panama canal is expected to develop European markets greatly for California products by giving cheap, rapid and regular transportation. It will help greatly all domestic markets near the Atlantic and Gulf. With canals built and rivers developed, the products will be taken from farm to ocean liner quickly and cheaply by means of flat-bottom steamers. In fact, it was the opening of the Panama canal that gave the idea of the Waterways Congress.



The Grade of Fertilizer Determines the Grade of Orange
And All Citrus Fruits

Harvest time shows that the grade of crop (quality and quantity *both* considered) varies directly as the grade of fertilizer used. A "filler-fertilizer" produces a "filler-crop." But a 100% IMMEDIATELY AVAILABLE—and 100% ACTIVE fertilizer like

Nitrate of Soda

produces the maximum prize-crop.

To get a maximum orange crop use a fertilizer that is ALL fertilizer—and 100% *quickly* available. Common sense dictates this. Low price suggests it. Harvest time proves it, too.

"Orange Culture" is a book of vital interest to every orange grower. We will send it FREE if you will request us.

DR. WM. S. MYERS
Chilean Nitrate Propaganda
25 Madison Avenue New York
NO BRANCH OFFICES

Nitrate of Soda 100 lbs. | Nitrate of Soda to the | Nitrate of Soda Acre

TANKS PIPE AND RIVETED PIPE WELL CASING STEEL WESTERN CO.

See That Solid Row of Rivets?

STRENGTH DURABILITY

WESTERN

SURFACE IRRIGATION PIPE

"Western" Galvanized Surface Irrigation Tees

Indispensable for Alfalfa, Beet Lands and Orchards

Not a drop of water will ever be wasted—and every quart will always be placed where you need it most—if you use WESTERN **Galvanized Surface Irrigation Pipe** on your gardens, fields and orchards.

Not only does it prevent waste and supply water on high points as well as in depressions (just where you need it) WESTERN **Surface Irrigation Pipe** is PORTABLE and it is PERMANENT.

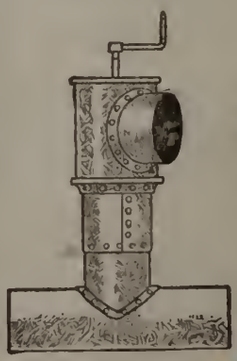
Unlike lock-seamed pipe, WESTERN IRRIGATION pipe will not leak and can be hauled about the ranch wherever it is needed, without damage. The secret of its strength and durability lies in its RIVETS. The experience of thousands of prosperous farmers has proven that the **riveted** seams of "Western" Surface Irrigation Pipe, make it the **best, strongest,** and most **economical** irrigation pipe on the market.

"Western" Galvanized Surface Irrigation Elbows

"Western" Galvanized Surface Irrigation Wyes

Sold in solid lengths, 10 ft. 6 in. No sections

You owe it to yourself and your farm to investigate this remarkable pipe. When you do you will realize you cannot afford to get along without it. Write for a full description and our surprisingly low prices.



"Western" Galvanized Swivel Irrigation Hydrants

Western Pipe & Steel Company
Of California

Southern California Factory: Los Angeles, Cal. **434 Market St., San Francisco** Northern California Factory: Richmond, Cal.

Branch Offices: Sacramento, Bakersfield, Fresno, Taft.

Strawberries

YIELD $500 to $1200 per acre under the Kellogg sure-crop method. Our beautifully illustrated FREE BOOK gives the complete Kellogg Way and tells all about the great Kellogg plant farms in Oregon, Idaho and Michigan.

R. M. KELLOGG CO.
Box 265, THREE RIVERS, MICH.

GUARANTEED·COFFEE

See Page 28

GEO. W. CASWELL CO.
San Francisco.

Take advantage of the Parcel Post and deal direct.

Gold-Filled Bracelet Watch. Guaranteed 20 Years.

0 Size Elgin or Waltham Movement.

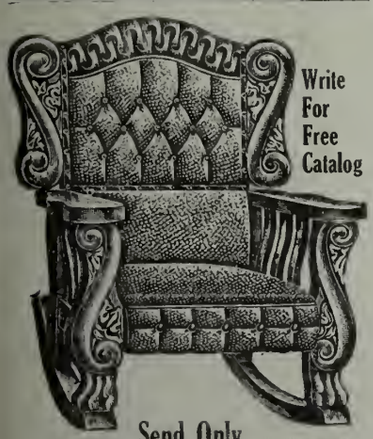
This and other articles of jewelry upon approval to responsible people. Send me your name and address and I will mail you a selection from which to choose. Jewelry manufacturing and repairing. Watch repairing. Mail me your work.

GEO. R. MOSS,
Monadnock Bldg., San Francisco.

STERLING RAMS PUMP WATER

The STERLING is an IMPROVED HYDRAULIC RAM made in all sizes for irrigation projects, city water works, farm and home water supplies, etc. Every Ram guaranteed. Capacity 2 to 5500 gals. per minute. Prices from $25 up.

Write for Catalogue.
HILL HYDRAULIC MACHINERY CO.
634 Pacific Block, SEATTLE, WASH.



Write For Free Catalog

Send Only **75c** And We Ship You This Superb ROCKER

Only 75c down and then 50c per month and we ship you this magnificent rocker—$4.95 in all for this handsome piece of furniture. Write for free catalog to-day. You can see for yourself what an elegant rocker this is. It is made of high-grade solid oak, profusely carved. A large, roomy, comfortable, well made Rocker, with high, wide back, fully tufted and buttoned. Upholstered with high-grade black Boston leather. Seat is made over full steel springs, has beautiful ruffled edge. Order No. OF3501. This Rocker is only one of our special bargains.

Monthly Payments

The great house of M. Friedman & Co., with a proud quarter-century record, endorsed by the greatest bank, will trust you and allow you to buy any article on easiest monthly payments. If you want anything in rockers, chairs, bedsteads, carpets, rugs, curtains, refrigerators, crockery, silverware, baby carriages, go-carts, stoves, ranges, or any other article of house-furnishing, don't fail to get our sensational easy terms.

FREE New Big Money Saving Catalog

Don't wait a minute before sending for our great bargain catalog. Bargains which are positively astounding.

Write To-Day—Don't Wait

Send a postal or letter—but send right now. Just your name and address on postal or letter and we will mail free and postpaid our catalog.

M. FRIEDMAN & CO., Dept. O. F.,
261 Post Street, San Francisco.

Farm Problems

WHAT seeds in their order are best to plant for "green manuring" to add humus to the soil?—J. A. S., San Francisco.

You are getting at the problem from the wrong angle. The idea is to select the variety that is most needed by your soil and best suited to your climate, then plant it when the right season comes. If you let us know your conditions we might advise you what you had best do.

Regarding the time of planting, that is, usually the fall, as soon as there is enough rain to bring the seeds up and to carry them along, or sometimes they are irrigated up. A special effort is often desired to give the plants a good start before the coldest part of the winter retards growth. The vegetation is commonly turned under in the spring with the usual spring plowing.

Common cover crops for fall planting are vetch, Canada field peas, burr clover, fenugreek and Tangier peas, all of which are called legumes and add nitrogen to the soil; also rye, barley, oats and other winter-growing plants which add no plant food, but improve the texture of the soil. Sometimes it is advisable to grow vetch with rye, or make some such combination. Furthermore, it is frequently necessary to grow rye or other non-legume for a season to get the soil in good condition for a legume. The wonderful root system of rye and the fact that it will do excellently on a run-down soil makes it the greatest favorite of the non-leguminous varieties of cover crops.

Besides the cover crops named, many growers simply permit natural vegetation to thrive in winter, plowing it under in the usual way. This is satisfactory if the growth is abundant, though specially planted crops generally add more plant food and benefit the soil more otherwise than does natural vegetation.

The fundamental fact of green manuring is to add vegetable matter to the soil, and when possible to have that vegetable matter of a leguminous nature; and it does not matter much when that material is plowed in or when it is grown. Therefore, if convenient to you to grow a cover crop in winter, you can grow another in summer and plow it under in the fall, perhaps removing some of the crop—say it is beans you plant—to pay expenses.

* * *

I NOTICED a request in your paper for a remedy to keep rabbits from gnawing trees and give this formula: Four pounds each of sulphur, yellow ochre and linseed oil, four ounces each of turpentine and asafoetida, one pint alcohol and six eggs. Stir these with enough buttermilk to make thick mash, then add sweet milk to make a thin paste and apply with brush.—J. E. B., San Francisco.

Our correspondent does not state whether he has tried the above formula or not, so we cannot recommend it as a sure preventive, especially as it seems difficult to get anything that will be certain to ward off rabbits. As a matter of fact, rancid grease is said to be a fine thing to mix in the whitewash with which the trunks of young trees are painted, as the odor of the grease keeps the rabbits away. We also hear that good success has been had with fresh blood, and that it is well when one shoots a rabbit to cut it open and rub the carcass over the bark. As the inquirer in the January issue was troubled by having the rabbits eat off the young shoots, a thing that whitewash or any other preparation would not affect, no mixture whatever would be effective. The only thing to do would be to build a rabbit-proof fence, eradicate the animals, or provide other food that they would like more than the shoots.

Mammoth Consignment Sale
OF

Registered Jerseys

BY CALIFORNIA BREEDERS.
On G. O. Hillier's Jersey Farm

MODESTO, CAL., on APRIL 2

96 HEAD SEVERAL REGISTER OF MERIT COWS **96 HEAD**

A magnificent offering of some of the best individuals and blood lines on the Coast. Over 70 head of females. All stock sold under a WRITTEN GUARANTEE of soundness, etc. Write G. O. Hillier, Sales Manager, for handsome illustrated catalog.

Consignors:
G. O. Hillier, Modesto | W. A. Bradley
J. N. Lester, Corcoran | R. L. Waltz

Auctioneers:
B. A. Rhoades, Los Angeles.
J. A. Corley, Modesto.

Rex "THE STANDARD" SPRAY CHEMICALS

Made by the first company to manufacture spray material in a commercial way. REX materials make good because back of them is both experience and success with spray materials. REX chemicals are compounded in California for California conditions. The first Lime Sulphur solution was a REX solution, and for every kind of spraying REX GOODS are established as "STANDARD."

"THERE IS A REX FOR EVERY ORCHARD TROUBLE"

REX Lime Sulphur, Miscible Oils and Phenols, Arsenates and Sulphides are proven for every need. Let us send you our Bulletin on "How to Raise Better Fruit and Plenty of It." Free on request. Address

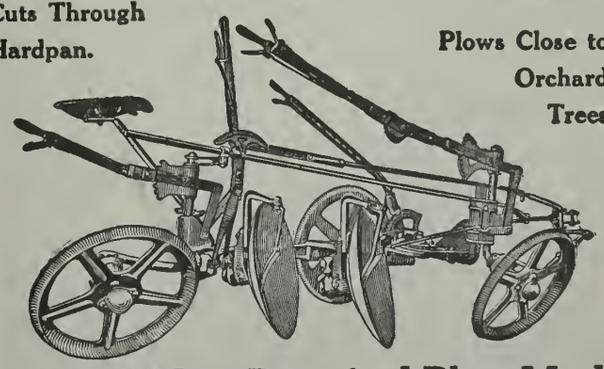
CALIFORNIA REX SPRAY CO. BENICIA, CAL.

MADE BY BENICIA IRON WORKS

BENICIA ORCHARD DISC PLOWS are the choice of the Pacific Coast Farmer.

Cuts Through Hardpan.

Plows Close to Orchard Trees



Best and Most Practical Plow Made

Contains every feature which is best suited for California Orchard work. The only disc plow available for use behind a small-tractor—one man operating both tractor and plow. Discs can be changed in few minutes and can be regulated to plow any desired depth (down to 10 inches) and width (to 12 inches).

The Benicia Orchard Disc Plow

won't tip over and rides easy as a wagon. All parts are guaranteed and will stand the hardest strain. No trouble or breakage on account of loose nuts, as special lock washers are used

Write for Illustrated Literature

BENICIA IRON WORKS
453 Brannan Street San Francisco, Cal.

The Very **Best** None Excepted

Spray Pumps

Do not buy before investigating our claims.

Because—Greater Volume at 1-3 the Power Saved.
No Plungers or other Packings.
Positive Delivery—No Valves.
No Springs—No Cams.
Weighs but 60 pounds.
Good for Years of Service.
Can be attached to any outfit—small expense. State make and size.

We Build
Deep Well Pumps
Pressure, Priming and Vacuum Pumps, Blowers and Compressors.

⅓-½ Less Power
"We Pump Where Others Fail."
All Sold on Positive Guarantee.

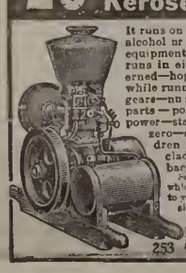
WRITE TO-DAY
Baker-Hansen Mfg. Co.
744-758 Park Ave.,
East Oakland, Cal.

A WOMAN FLORIST
6 Hardy Everblooming Roses On their own roots. ALL WILL BLOOM THIS SUMMER **25c**
Sent to any address post-paid; guaranteed to reach you in good growing condition.
GEM ROSE COLLECTION
Etoile de France, Dazzling Crimson
Blumenschmidt, Yellow and Pink
Etoile de Lyon, Golden Yellow
Bessie Brown, Delicate Blush
White Bougere, Snow Wh.
Mamie, Grandest Pink
SPECIAL BARGAINS
6 Carnations, the "Divine." Flower, "all colors, 25c.
6 Prize-Winning Chrysanthemums, - - 25c.
6 Beautiful Coleus - - - - - 25c.
8 Flowering Cannas - - - - 25c.
8 Choice Double Dahlias, - - - 25c.
8 Choice Hardy Iris, - - - - 25c.
10 Lovely Gladioli, - - - - - 25c.
10 Superb Pansy Plants, - - - 25c.
15 Pkts. Flower Seeds, all different, 25c.

Any Five Collections for One Dollar, Post-Paid. Guarantee satisfaction. Once a customer, always one. Catalog Free.
MISS ELLA V. BAINES, Box 94 Springfield, Ohio

Fancy Alfalfa Seed
Vetch
Recleaned Barley Seed
Write for Prices and Samples
West Coast Seed House,
116-118 E. Seventh St.
LOS ANGELES - - - CAL.

20 Reasons Why You Should Investigate the SANDOW Kerosene Stationary ENGINE



It runs on Kerosene (coal oil), gasoline, alcohol or distillate without change of equipment—starts without cranking—runs in either direction—throttle governed—hopper cooled—speed controlled while running—no cams—no valves—no gears—no sprockets—only three moving parts—portable—light weight—great power—starts easily at 40 degrees below zero—complete, ready to run—children operate them—5-year iron-clad guarantee—15-day money-back trial. Sizes 2 to 20 H. P. Send a postal today for free catalog, which shows how Sandow will be useful to you. Our special advertising proposition saves you one-half cost of first engine sold in your county. (161)
Detroit Motor Car Supply Co.
253 Canton Ave., Detroit, Mich.

Cultivating and Harvesting Berries

—By M. J. Moniz, Manager Barlow Ranch, Sebastopol—

IN my article last month on berry growing I gave, in a brief way, some hints on planting berry vines. In this I will tell something of the cultivation needed to insure good fruit and thrifty plants.

During the first year, after the vines are set out, not so much work in the field is needed as in the years that follow. All of the work done, however, should be thorough. I told in my last article of planting the vines during the winter and early spring months. Now begin cultivating the ground in March should the rains permit, and continue this work until late in the summer. This work is mainly to retain the moisture and to keep the weeds down. During this year the ground should be plowed twice, at least. A nine-inch plow is sufficient, and set it to go five or six inches deep. Plow away from the vines the first time and make six or seven furrows between the rows of plants as set out. Follow the plow with a harrow, going over the ground twice. If Lawton berries are planted, cross harrow during the second application. This cannot be done with the Mammoth or Logan berries because of the way they are staked. Use an ordinary one-horse harrow. A light one is preferred.

When the second plowing is given, turn the furrow toward the vines. Follow with the harrow as before. The time of the second plowing will depend upon the nature of the ground. It is wise to cultivate between these plowings once or twice. How often will depend upon conditions. Never allow a crust to form on the surface of the soil. It is a good thing to hoe around the plants occasionally, using a four-tine hook hoe.

During the second year and for each year afterward plow Lawton berries four times a year, cross-plowing each time. Plow the first two times away from the vines and the last two times toward the vines. In plowing the last furrow next to the vines, tip the plow to one side so as to dig shallower on the side next to the plant. This will prevent cutting any of the many fine small roots and feeders. This is to be particularly observed when plowing Loganberries. The roots of this plant are all in a bunch and near the surface. The hoe should be brought into use after the second plowing. When hoeing be careful not to break any of the canes which are just sprouting out of the ground about this time. It is not good to pile any soil up around the hills, but do not leave any of the roots uncovered.

Loganberries and Mammoth blackberries should be plowed at least two times during the summer. The first time turn the furrow away from the vines and the second time toward the vines. One harrowing after each plowing is all that is generally necessary. If a crust should form on the top of the soil, run a spring tooth cultivator over the ground. This will keep the soil in a loose condition. It is impossible to cultivate these two varieties until late in the summer owing to the long runners that the plants put out in every direction between the rows. This difficulty can be overcome to a great extent by straightening them along the row. This also protects them from being trampled on by the pickers during harvest time.

With these two last varieties, do the hoeing after the first plowing. Hoe all the narrow strips of ground left by the plows.

While care is required in cultivating berry vines, greater care is required in harvesting the crop.

In Sonoma county the harvest for Loganberries commences about June first and lasts for a month. The Mammoth berry commences about June 15 and is over about July 10. The season for the Lawton commences about July first and lasts until about September first.

There are five important rules to observe when harvesting berries. They are:

1. Never pinch a berry so as to crush it.
2. Never put any leaves, stems or defective berries in the box.
3. All ripe berries should be picked from the vine at each picking. They will spoil before the next picking.
4. Never touch a berry but once.
5. Make the box and the package of berries clean and attractive.

The Loganberry is the firmest of the three and will stand shipment of five or six days in refrigerator cars.

For shipping, or table trade, the field should be picked over three times a week. For canneries, twice a week will be sufficient.

Berries for the table or for shipping are packed in one-pound baskets and two dozen to the crate. For the canneries the berries are put in five-pound trays. The berries should not be piled high in the center of the boxes or baskets.

Do not pick when there is a fog or heavy dew. If the berries are moist when placed in the baskets they are liable to mould quickly.

Big Acre Crop

The crop championship of the south coast for 1913 ought to be handed to H. Larter, a farmer residing several miles north of Huntington Beach. An affidavit made by five Huntington Beach business men, who weighed and measured his crop, shows that Mr. Larter produced on one acre—and the acre next to the road, at that—in 1913, $643.80 worth of farm products consisting of 11,203 pounds of field corn worth $27 per ton, 160 100-pound sacks of potatoes worth $2.50 per sack, and 1,260 pounds of tamale husks worth eight cents per pound. The crop was all disposed of at Huntington Beach without difficulty.

From the sum total the grower could deduct the entire cost of production and still have more money left than the acre cost him. During the past season Mr. Larter grew 20 acres of corn, but he only had a small portion of it double cropped with potatoes. On the area that he double cropped he planted potatoes early in the spring. When they were nearing maturity he planted white field corn in the middles. The corn came up without sapping the potato ground, and when the corn was high enough to make shade the potatoes were dug and piled in the middles between the corn rows. There the potatoes remained until just before the rains, when they were sacked and sold to people in the nearest town, at $2.50 per sack.

At the proper time the tamale husks were cut, packed and sold at eight cents per pound, and then the big firm ears of white corn were gathered, piled, weighed and sold at $27 per ton.

In growing his profitable double crop Mr. Larter put himself to no extra bother. He merely planted the potatoes and corn and gave the field plenty of moisture and cultivation at the proper time.

Ventura County's Lemons

In 1912 Ventura county had 2,733 acres of lemons. There are now 5,580 acres of lemons in that county, and the orange plantings of that county were increased 528 acres in 1913.

The LAST WORD in SEED CATALOGS

We have put the peg a notch higher this year in the production of our 1914 Catalog. It contains much new information, fine, photographic illustrations and complete listings of the stocks of the big Seed House of the Southwest. Every grower—farmer, gardener, orchardist or owner of a houseyard—should have this book.

MAILED FREE ON REQUEST

Please mark letter Dept. L

Germain Established 1871 SEED & PLANT CO.
326-328-330 SO MAIN ST.
LOS ANGELES. CALIFORNIA

SEEDS

Six packages of our dependable northern grown seeds sent absolutely Free to those who send for our handsomely illustrated and descriptive seed catalogue. All we ask is that you

Send 10 Cents

to cover cost of packing and mailing. Highest quality seeds; prices reasonable; the collection follows:

RADISH, Scarlet Beauty	Value	10 cts.
TURNIP, Purple Top White	"	5 cts.
ONION, Large Red	"	10 cts.
SPINACH, Broad Leaf	"	10 cts.
LETTUCE, Dew Drop	"	10 cts.
MIGNONETTE, Colonial Mixture	"	10 cts.

Write today and receive one of the 10,000 fifty-five cent collections, which we are giving away to get our catalogues into new territory.

THE CHERRY SEED CO.
128 Vine Street Rockford, Ill.

Grow **Mushrooms**

Big profits—little work, no trouble. Any one can grow them. Plant Spawn now—first crop in six weeks. You can sell more than you can grow. You always get big prices. We teach you how. Free—furnish you with the celebrated Arndt Pure Culture Spawn guaranteed to grow. Write for interesting booklet.

ARNDT MUSHROOM FARM INC.
UNION OIL BLDG. LOS ANGELES CAL.

12 EVERBEARING STRAWBERRY PLANTS FREE

Yes, ABSOLUTELY FREE! This is simply to introduce our wonderful Productive Strawberry Plants

Produce great crops of fine extra large, delicious strawberries all summer and fall. Fall bearing strawberries are in great demand. Here's your chance to get 12 nice, thrifty plants, also our Three Color Catalog, FREE. Your name and address on a postal will bring them. Plants sent prepaid in proper planting season.

BRADLEY BROTHERS
116 Main St. Makanda, Illinois

Nurserymen for Forty Years

26 YEARS IN CALIFORNIA

Wholesale propagators of first-class trees and vines.

420 acres in growing nursery stock in **Fresno, Madera and Tulare** counties. Three million trees, two million vines. Every plant propagated from heavy-bearing parent trees and vines.

Planters will find it worth while to look over varieties of **Peach, Apple, Apricot, Olive, Plum, Prune, Pear, Orange, Lemon** and other fruit trees; also good assortment of shade and ornamental stock.

Write for Catalog—Send at once list of your requirements for our estimate.

Kirkman Nurseries, Inc.

Main Office
TULARE AND N STREETS
FRESNO, CAL.

Rhubarb for Profit

A FREE BOOK ON
Rhubarb Culture
Free for the asking; $1,000 profit. Now best time to plant.
J. B Wagner, Pasadena, Cal.
The Rhubarb, Berry and Cactus Specialist

California Roses

By John Vallance

VISITORS to our beautiful State all remark and are much impressed with the many beautiful trees and flowers that they see growing within our borders. It is a treat to them. We Californians do not appreciate the many wonderful things we have half enough.

Take roses, for instance. In no other country, I believe, can be seen such an assortment. I do not mean to infer that roses cannot be grown elsewhere, but I do say that California can grow out of doors a larger collection. The tea varieties succeed to perfection for the reason that our winters are not severe enough to cut them down, as is the case in other States. Therefore, being so wonderfully blessed in this respect, we ought to keep on planting roses more and more every year.

The California nurseryman is a live wire in this respect, for he keeps constantly importing the newer sorts introduced by English, German and French rose specialists who make a business of hybridizing. One would think there were enough varieties without getting new sorts, but it seems as though there is no limit to the "crossing" that can be made, and these new types are really wonderful in color, form and habit of growth.

Take, for instance, the Lyon Rose, raised in France. This is a glorious rose, the color resembling a beautiful "Golden Gate Sunset." It looks as though the Creator had in mind this beautiful land of ours when he created this lovely rose. The Sunburst, very aptly named, is also a glorious rose. The color is an apricot yellow, the flowers are produced very freely indeed. They are sweetly perfumed, have stout stems holding their flowers well above the foliage, a happy look in their faces that you cannot help but love. Children beholding such flowers must be sweetened when they gaze upon such exquisite flowers, and thus sweetened they are going to make better men and women, better citizens, and anything that can better the people is surely something that should be encouraged.

Being so greatly blessed, therefore, we should not neglect so great an opportunity to do good. Roses preach to us sermons that no fine orator can equal. They teach us things that reach the innermost recesses of our souls. Man is sent into the world to do all the good he can, and to get the best out of it flowers are among the greatest lesson teachers.

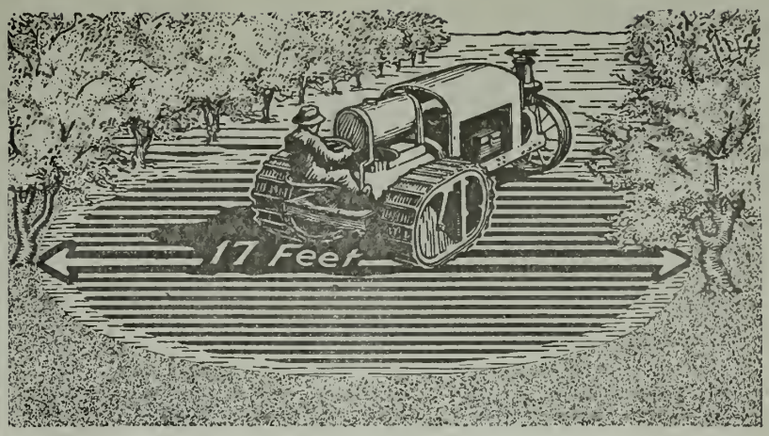
Having such a glorious opportunity ought we not to further this good work, and who can do more towards this end than the public press? The press, I take it, is stronger than the pulpit. If our daily papers would devote one day a week in their issues to the culture of the plant, the tree, and the vine, it would be doing a good work of which it might be well pleased.

This subject is limitless in this blessed land. The climate, the soil, the winter rains, are all at our command. All we have to do is to plant and tend.

Let the visitors of 1915 see us at our best; show them what we can grow. Buildings costly can be erected in any clime, but perfected plant life can be seen only in limited sections. And when our visitors return to their homes, may they take with them beautiful and lasting impressions of this country, whose setting is in the Occident and whose shores are lapped by the waters of the Pacific.

Making Horses Stale

Horses that are allowed to go to their stalls at night covered with grime and sweat and are sent to the field next morning without a thorough cleaning will soon grow stale.



The Yuba Ball Tread Tractor

makes a complete turn in less than a 17-foot circle.

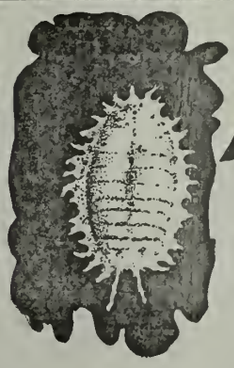
At the California Power Farming Demonstration in Fresno, February 19, 20, 21, and in Marysville March 5, 6, 7, be sure to look for the Tractor that

Is only 4½ feet high.
Does not pack the ground.
Makes a complete turn in 17 feet.
Runs on a practically frictionless track and does not bind on side-hill work.
Works efficiently in orchard or field, in mud, sand or on an asphalt street.

You will recognize it at once—the most compact and business-like Tractor there.—**THE YUBA BALL TREAD TRACTOR.**

THE YUBA CONSTRUCTION CO.

Works, Marysville, California. Sales Office—433 California St., San Francisco, Cal.



Beware the MEALY BUG!

This pest not only attacks the leaves and branches of the tree but the fruit itself. It also secretes itself and lays its eggs in the end of the fruit and gives off a sticky sort of honey dew which makes clean fruit almost impossible. Guard against this destructive insect by using

YEL-ROS *UNIVERSAL ORCHARD SPRAY*

For this particular purpose it has been proved to be the most effective spray in existence. And while it kills both the insect and the egg it does not harm the tree. Yel-Ros is made and compounded by expert chemists and entomologists—men who have made this line of study their life's work. You therefore do not take a chance when you order Yel-Ros. It is safe and sure and the cheapest effective treatment.

Among the products we manufacture and distribute are

YEL-ROS	DISTILLATE OIL EMULSION
MISCIBLE OILS	CRUDE OIL EMULSION
CRUDE OIL EMULSIFIER	LIME SULPHUR SOLUTION

A free book on spraying sent free of charge. Address
Insecticide Department—PAUL R. JONES, Entomologist

BALFOUR, GUTHRIE & CO.
352 California St., San Francisco
828 Higgins Building, Los Angeles, Cal. Park and Oak Sts., Portland, Ore.

ORCHARD and FARM

ESTABLISHED 1888

IRRIGATION

VOL. 26 FEBRUARY, 1914. NO. 2

Published Monthly at Hearst Building, San Francisco, Cal., by the Country Life Publishing Company.

SUBSCRIPTION CONDITIONS

Subscriptions are discontinued on expiration of time for which subscription is paid unless renewed beforehand. Subscribers receiving a subscription blank with this magazine are thereby notified that their subscription has expired, and they are invited to return it promptly with a remittance, if it is desired not to miss an issue. No other notice is given. If you receive a sample copy with a subscription blank inclosed, it is an invitation for you to become a subscriber.

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

CONTRIBUTORS TO ORCHARD AND FARM.

GEORGE W. SHAW, Agronomist—Berkeley, Cal.
MEYER E. JAFFA, Poultry Expert, University of California—Berkeley, Cal.
H. E. VAN NORMAN, Vice-Dean and Director, University Farm School—Davis, Cal.
DR. A. J. COOK, State Commissioner of Horticulture—Sacramento, Cal.
E. O. ESSIG, Secretary State Commission of Horticulture—Sacramento, Cal.
JOHN VALLANCE, Horticulturist—San Francisco, Cal.
A. B. CORDLEY, Dean, College of Agriculture—Corvallis, Ore.
ARTHUR G. B. BOUQUET, Oregon Agricultural College—Corvallis, Ore.
C. I. LEWIS, Horticulturist, Oregon Agricultural College—Corvallis, Ore.
R. R. GRAVES, Dairy Expert, Oregon Agricultural College—Corvallis, Ore.
E. E. SELDEN, Dairyman—Selma, Cal.
P. C. CHADWICK, Apiarist—Redlands, Cal.
O. E. BREMNER, Horticultural Expert—Santa Rosa, Cal.

Plan Your Work So As To Improve Your Farm.

HAVE you made any definite plan for the management of your farm during the present year? Have you put into operation a system of farm control that will tend to increase the output of your land or which will increase the fertility of your soil? These are matters which may well be considered at this time of the year. If farming is to be profitable plans must be carefully worked out for the present and for the future. The farmer must plan far ahead. What he does to-day is not for to-day, but for months and for years to come. Where farmers have been carrying out definite plans in soil and crop management, or the care of livestock, it is not possible nor yet wise to change these plans very materially at once. Changes must be made gradually, and for this reason care should be taken in planning them. There are few farms that should not have some livestock. It is not wise, however, for a man to jump into the livestock business, or to undertake the care of animals without some preparation. Go to raising livestock gradually and in a way that will be educational. Livestock will increase quite as fast as the ability of the average man grows to manage them, and the increase will be checked by the lack of ability to manage. There are few phases of farming quite so remunerative or so pleasant as livestock management. Farms are better for it and farmers are better for it.

Every farmer knows that in his neighborhood there is some one or more men who are growing almost every year greater crops than the majority of their neighbors. One thing to think about is how these successful farmers achieve their success. It is not necessary to adopt their methods of cultivation because the condition of your land may not be just the same, but it will be a big help in making plans to find the underlying reason why they succeed. It is not wise to follow a neighbor's methods without knowing the reason back of them. Plan to grow crops at a profit instead of growing them at a loss. The profit that comes to a farmer comes from growing more than an average crop.

It is worth while to consider the fertility of your soil. Do not allow any fertilizers to go to waste. It is worth while to consider how deep you will plow and how you will manage the land to get the best seed bed. Perhaps, if you are a one-crop farmer, you can increase your profits and at the same time conserve your soil by adopting a crop rotation. Put your head to work and resolve to be a better farmer in 1914 than you were in the year just passed.

The cheap man is always on the lookout for something cheaper than he is.

THE small farm, if intelligently and intensively worked, insures a better living than the opportunity offered in the city for the average person. It is probable that the small farmer will not accumulate any great fortune, but he will be able to live independently and always be sure of a good living. Very few in the cities, in proportion to population, accumulate fortunes, although they work the year round and work hard.

The millions who live in the cities and towns must be fed, and the feed must be raised on the farms. The prices of all farm products are remunerative to the producer and there is no indication that the returns to the grower will be lessened. The agitation that is now on against the high cost of living, if it has any effect, will not in any probability reach the producer. The producer of food stuffs must receive a profit on his products or he will quit producing. There is a very wide margin between the price received from the producer and the price paid by the consumer, and it is there that the cause for complaint is found in the high cost of products in the city's markets. It costs just twice as much to put the crop from the farmer's fields, after it is harvested, into the hands of the consumers as it does to raise it, and a very small part of that cost is in the transportation. The city consumer is very largely to blame for this expense. City retailers are obliged to maintain expensive auto delivery service to deliver one or two miles away a nickel order of produce and an expensive telephone service to receive such orders. All this the consumer must pay for, and the dealer tries to put some of it on the farmer.

The man who says the right thing at the right moment is not much of a talker.

Rather than lose sleep over the troubles of the other fellow it is better to look up some of your own.

AT the present time there are few farm products that are not profitable to the grower. There seems to be a good demand for all lines produced. The producer has only to pay a little attention to what is most needed in the local and general markets of the country and direct his efforts accordingly. All kinds of fodder and feed crops are bringing good prices. The raiser and breeder of livestock has never been able to get better prices than now, all things considered. Farm lands and grazing lands are each year steadily increasing in selling value. The farmer is not hunting buyers for his produce, buyers are hunting the produce. There is activity in all lines of trade in which farming and farm operations are associated. It may be that this high tide of farming prosperity will not continue. Other parts of the world have not been so highly prosperous and the advantages this country is now enjoying should be taken with a view to economy and saving for a period of less fortunate conditions.

There is nothing like candor as a friendship cooler.

It is unnecessary to send out a monthly statement to the fellow that owes you a grudge.

THERE is a wonderful power and influence shown in the individual farmer who has a high respect for himself and his farm. It is the prime cause of about all the difference seen in the appearance of different farms. More than that, it shows in cash profits, for, as a general rule, the best kept farms with the best buildings, equipment and livestock make the most net profit. Good order on the farm shows that things are not running to waste. But the prime cause of it is found in the high respect such a farmer has for his own business. Sometimes this is spoken of as having a pride in the appearance of things, but true pride is based on self-respect. There should be more of his high-minded respect for the business of farming among the farmers. Self-respect and an honest pride in one's calling is the very salt of human existence.

The Agricultural Outlook

IN monetary value of products the farms of the United States have broken the annual record, although the volume of production, as indicated in the report of the Secretary of Agriculture, was materially below the average. The total value for 1913 of $9,750,000,000, nearly one-half a billion dollars above the value of 1912, which was itself a record year. This amount is composed of estimates for the items that make the census total of farm products. It is far from being equivalent to the total sales of farm products, but its items are the values of farm crops, of farm animals sold and slaughtered, and of farm animal products. In an analysis of farm expenses and the variation of cash income per farm and per capita of rural population in different sections, it is evident that the enormous aggregates of farm production and values do not mean that the average farmer is realizing any material profit over and above what might reasonably be expected from his labor and investment. The uncertainty of the farmer's cash income, however, is more than offset by the certainty of a livelihood and the sense of permanent security, and the fact that he is his own employer.

However desirable increased production on farms may appear to be from the consumer's standpoint, it does not follow that such increased production would result in any increase in the cash income per farm or per capita of farm population, or that prices paid by consumers would be any lower. The estimated total farm production in 1913 is less than in 1912, yet the estimated gross and net cash returns to farmers are greater than in 1912. Had the total production in 1913 equaled or exceeded the 1912 production, it seems probable that the cash income per farm would not have been greater and might have been less than in 1912; but it is extremely doubtful whether the cost to the consumer would have been any less, because retail prices are promptly raised on a prospect of underproduction, but are very slow to decline if there is overproduction. The long line of distributers and middlemen between the farmer and the consumer are in a position to take advantage of the market, and to a certain extent control the market, in both directions, because they are better organized to keep informed of crop and market conditions, and to act promptly, than either farmers or consumers, who are not organized, and as individuals are helpless. The high prices paid by consumers, ranging from 5 to nearly 500 per cent, in some cases, more than the farmer receives, indicate that there is plenty of room for lowering the cost of farm products to consumers and at the same time largely increasing the cash income per farm without increasing farm production. This condition is undoubtedly a marketing problem, which will have to be solved by better organization of farmers and improved methods of marketing. When as the result of such organization and improved methods the price of farm products can be maintained at a higher level without increasing the cost to consumers, farmers will be justified in increasing the output of their farms with a fair prospect of realizing a reasonable profit on their investment of time, labor and money, which in the aggregate is enormous.

THE Union Stock Yards Company of Portland has offered a pig to every city and country school in Oregon and Washington, the only requirement being that records shall be kept of the kind, quantity and quality of feed given to determine the cost of preparing it for market. When ready for market the Stock Yards will buy the pigs back at market prices. The officials of the company expect the school children to compete for the distinction of making the most money from their particular school pig. At the same time it will give the school children an insight into the profit to be made from raising pork.

"Have you lived here all your life?" asked a traveler of a cadaverous rustic who stood idly leaning against a fence. The rustic shifted his weight from one foot to the other. "Not yet!" he replied.

"Muz, did you hear the stepladder when it tumbled over?" Mother (not rising from her lounge)—"No, Darling, I hope papa didn't fall." "Not yet; he's still hanging on to the picture moulding."

The Literary Moses

There's a deal of classic rubbish
  In the magazines to-day,
Writ by masters of expression
  And rhetorical display.
They prate of agriculturists
  Recruited from the slums—
The city's rank incompetents
  And derby-hatted bums.

They would make of drunken brawlers
  Peaceful tillers of the soil,
And impress the chronic loafers
  With the dignity of toil;
They'd persuade the thug and gambler
  To forsake the haunts that charm,
For the ponds of milk and honey
  That awaits them on the farm.

Rural life beneath the surface
  Has a sterner phase by far,
Than appears to the observer
  In a speeding auto car.
The farm has naught to offer.
  To those who shrink from toil
Who are useless in the cities
  Would be useless to the soil.

As for most successful farmers,
  Are to the manor born,
And the labor guilds and unions
  Laugh our strenuous ways to scorn.
From sun to sun we're toiling,
  Through the blazing hours of June—
Not eight hours spent in labor,
  And six hours in a saloon.

There are honest, sober toilers,
  North and South, and East and West,
Who are living in the cities
  Because the city suits them best.
All the people can't be farmers,
  Oh, ye theorists, intense!
Spice your literary efforts
  With a grain of common sense.

W. P. LOCKHART.

Plain Facts

"Washington threw a dollar across the Potomac."

"That fact was overrated."

"Who ever excelled it?"

"Washington himself, the time he threw 3,000 troops across the Delaware."

Longing for the Old Days

"Do you think the country is prosperous?"

"Yes," replied Senator Sorghum. "But what's the good of having a whole lot of wealth when nobody dares spend any of it for votes or influence?"

Sure Enough

Mrs. Wellment (bestowing a dime)—Poor fellow! You say your wife and family are starving—where are they?

Weary Willie—Dey are boardin' at a summer hotel, lady.

March of Progress

Neighbor from Town—I understand you're sellin' off your cows?

Farmer—Yep. Ain't got no place to keep 'em. My boy Bill wants th' south meadow for a golf links.

The Wherefore

"Why does that hen refuse to associate with the other hens?"

"Oh, that hen is descended from one of the original Plymouth Rocks."

Do Not Rob the Soil

"STARVE the soil and it will starve you." This is often repeated, but all tillers of the soil do not heed it. There are many abandoned, or non-paying, farms to prove the truth of the axiom. The man who depends upon the soil to supply him with the necessities and comforts of life should study methods for its treatment, which will enable it to do this without the sacrifice of its fertility.

In this age of progress and advancement in agriculture we all know that those qualities of soil which give strength and vigor to plants can be exhausted and that the success in agriculture depends upon a system of soil management which retains the soil's power to produce. All soils contain more or less of plant food constituents. A soil which contains the greatest amount of plant food is designated as fertile soil.

One of the first aims of the farmer when he selects a piece of land on which to establish his home is to secure a tract of land that is fertile. The thing which should concern him most is the adoption of a system for its management that will keep the land fertile. As his success depends on production it is important that the land lose none of its power to produce.

Starving a soil consists in taking from it the plant food constituents without returning to it any of these essentials to plant life It matters not how fertile a soil may be in its virgin state, its fertility may be exhausted by the continuous growing of crops, which extract from the soil the plant food materials and return none of it.

The worst enemy to a fertile soil is the one-crop farmer. It is generally understood that the continuous planting of one crop will soon exhaust the land, or at least transform the land from a state of fertility to one of unproductiveness. Continuous planting of one crop on a soil does not always render the soil non-fertile, though it may render it non-productive. A soil which refuses to produce does not always do so because its plant food has been exhausted, but because of the mechanical conditions of the soil. This condition is brought about by the system of culture required to produce the same crop year after year. Following the same method of soil management year after year is not good farming. It both impoverishes the soil and the farmer who follows it.

A soil cannot remain productive when deprived of organic matter. As soon as the humus of a soil is exhausted it becomes droughty and non-responsive to cultural treatment. The remaining plant food in the soil is made non-available to the plant and partial, if not total, crop failures occur. The plant food in the soil is not available to the plant in its undissolved state. It requires moisture to dissolve it. Then, too, it must undergo a chemical change before it can be dissolved. Soil bacteria is necessary to produce this change. Soil bacteria is essential in production. This bacteria does not exist in great numbers in a soil in which there is no organic matter. Organic matter then plays an important part in soil fertility and productiveness. The surest and most economical way to keep a soil productive is to rotate the crops grown on it; to plant legume crops to plow under in a green state for the purpose of producing humus. Not a blade of grass or any character of weed growing on the soil should be permitted to be burned or removed from the soil. They should be incorporated in the soil. The barn-lot manure should be spread over the land and plowed under. It has a marvelous effect in building up a worn-out soil and if applied in abundance will restore to the land a large per cent of the plant food taken out by the crop.

A farmer should never permit the fertility of his soil to be reduced. A system of soil management that reduces production is a system which robs the soil, which in turn robs the farmer.

"Mamma, were you fond of flirting when you were young?"

"I am afraid I was, dear."

"And were you ever punished for it, mamma?"

"Yes, dear. I married your father."

"Madam," said Plodding Pete, "I once had a wife and family, but I couldn't be contented, so I left home."

"Well, here's a chicken sandwich for you. Mighty few husbands are so considerate."

Making the Farm Pay

By G. W. Shaw.

THE choice of a rotation is very largely a local and personal one, but should always involve the choice of crops which are likely to give the most gain and the least loss and should include a primary money crop, a cleansing crop and a fertilizer crop. It goes without saying that any rotation should include that crop for as many years as may be practicable, with due regard for maintaining soil fertility, which returns the greatest profit per acre. The money crop should dictate the rotation, and the other crops should be selected with the definite idea of rendering the soil most congenial to it. Maximum profit is the main point to be observed in planning the rotation, but having in mind always that no crop is profitable if it is secured at the expense of seriously impoverishing the soil. If alfalfa is the main money crop then grow it to the limit of the soil's patience, and select the other crops which are most serviceable in maintaining the fertility and fitting the soil to the maximum for this crop.

If the money crop is a sown crop then some cultivated crop should be introduced into the rotation at a logical period, in order to free the land from weeds. In this country either corn, beans or potatoes offer the best crops for this purpose, although mangels and sugar beets are also valuable for the purpose where they can be utilized and the soil conditions are favorable.

The fertilizer crop should not be forgotten, and in the West generally should be chosen with specific reference to securing the maximum amount of green stuff to be turned under in the spring for maintaining the humus supply of the soil. Best of all is some form of legume, but in lieu of this, where conditions are not favorable, winter-grown rye may be substituted. This fertilizer crop may be grown specifically as a green manure crop, or as a catch crop, which will improve the fertility of the soil. Where at all feasible this fertilizer crop should be a leguminous one on account of its greater fertilizing value. Further, attempt should be made to include in the rotation both shallow and deep feeding crops.

Another very essential thing is the soil management. A large proportion of farmers plow three or four inches deep only. This is a great mistake. Nothing wears out the land sooner than to have only the top three or four inches worked by the plow. Ordinarily speaking, it is better to plow a little deeper each year until a depth of eight to ten inches is reached. After that fall plowing should always be deep and spring plowing should be shallower, say five to six inches deep. It is not well to work the ground either when too wet or when too dry. A heavy soil plowed dry usually results in a mass of clods the balance of the season. Plowed too wet means a serious puddling of the soil, and putting it out of condition for a number of years. In spring plowing the harrow should follow the plow immediately in order to secure a good pulverization of the surface. If the plowed land has laid several months after plowing, before the seeding, a disc harrow is an extremely useful implement for pulverizing, but it is less useful on land freshly plowed when it was in good condition

The object of plowing is to mellow the soil and incorporate humus in it. Greater attention to good plowing and the proper preparation of the seed bed will be returned many times over in the crop produced.

For the maintenance of fertility it is extremely important that a considerable portion of what is raised on the farm be fed to livestock on the place and the manure returned to the land. In this practice about 85 per cent of the plant food is returned to the soil, and the land is not only kept more fertile, but also in better physical condition for crop production. Unless this is done the land is certain to ultimately show decreased yields It may be stimulated for a while by commercial fertilizers without manure, or other means of supplying the soil with humus, but this will only hasten the exhaustion of the soil. There is room for a great development for all kinds of livestock farming in all parts of the West, and there is nothing which aids in maintaining the soil fertility and good physical condition so well as the use of stable manure. It is possible to keep up the stock of humus by the plowing under of green-manuring crops, but it is always less effective than the manure from livestock. A liberal use of stable manure, supplemented by a rational use of the mineral fertilizers, potash and phosphoric acid, will enrich instead of impoverish the land.

As much as possible of the food required by the family should be produced on the farm. A well kept garden, a family orchard and a flock of poultry will greatly add to the profits of the farm and at the same time enhance very materially the standard of living on many farms. This can be done with little labor and comparatively no expense. Every farm should carry enough poultry to supply not only what the home will consume, but also to meet the grocery bills of the average farm.

One of the worst mistakes a farmer can make is in working too many hours a day. It does not allow for leisure to keep abreast of the times in matters agricultural and the market conditions. Far too often it is thought necessary to rise at 4 o'clock in the morning and work till 9 or 10 o'clock at night. You will usually find the pessimistic farmer in this class, and there is little wonder that his children are anxious to leave the farm for a more progressive life. Less brawn and more brains are essential to-day than in the days agone. It is surprising how much work can actually be accomplished in ten hours if the work is effectually planned and directed. Use the extra hours in keeping abreast of the times by reading the literature of the business of farming. It is interesting and profitable, and you will be in better physical condition for the next day's work.

On the other hand there are frequently found farmers who do not work enough. The fishing is good and they must not let that pass, even though work which is pressing be allowed to suffer. Let the work be planned systematically and far enough ahead so that it can be done the most effectively. A systematic rotation is a wonderful help in doing this.

I have often heard farmers maintain that they saved labor by letting all the weeds grow and then killing them all at one time, instead of getting after them just after sprouting, which is the easiest and surest time for destroying them. Then they can be killed easily by going over the ground with a light implement, but after they have become well rooted they require much more strenuous and expensive treatment.

The man who makes a great success in any calling is a thorough student. There is much agricultural matter of great value being published these days, and the man who neglects to keep in touch with it is lessening his effectiveness to a very large extent.

If your orchard bears

The new Burbank PRUNE

The "Standard"-9 to a pound

you will have a wealth-producer out of all proportion to the cost of and the labor given to it. Luther Burbank says of it, "The best prune ever produced."

Well grown Burbank Standard Prunes measure 4½ inches around one way by nearly 6 inches long the other way. They are fine grained and juicy, yet firmer than most other drying prunes—very sweet and a perfect freestone. The trees are enormous and never failing bearers—good healthy growers.

This is another of the new creations of Luther Burbank described in our 1914 Nursery Catalog. By having this book you will familiarize yourself with the sure, big revenue-producing original Burbank novelties. You will learn about Burbank's Giant Cherry that is more than 3 inches in circumference and more than an inch in diameter; of Burbank's Goldridge Apple, a fruit finer, larger and more succulent than its parent, the Newtown Pippin. You will learn about the Giant Plum, the Stoneless Plum and a Plum which bears profusely when all others fail.

Remember it requires as much time and labor to grow ordinary productions as these sure money-bringers. We are now prepared to furnish anything required in the seed and nursery line in addition to the original Luther Burbank productions—citrus trees, ornamental trees, shrubbery, pot plants, evergreens, and all the standard varieties of fruits.

Write at once for our 1914 catalog O. F.

The Luther Burbank Company

Sole Distributer of Luther Burbank Horticultural Productions

Burbank Building
SAN FRANCISCO

WARNING—To be sure of obtaining original Luther Burbank productions, look for the seal on all purchases you make. None genuine without it. This is a protection to you and one to which you should give heed.

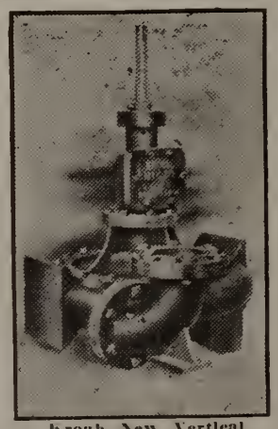
Ask Your Dealer for

EL DORADO COCOANUT OIL CAKE

for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market to-day. If your dealer doesn't carry it, address

EL DORADO OIL WORKS

149 CALIFORNIA STREET - - - - - - - - SAN FRANCISCO



Krogh New Vertical Water Balanced Pump

KROGH'S NEW VERTICAL PUMP

The Krogh New Water Balanced Vertical Pump contains many new and valuable improvements, same being fully explained in our Bulletin, R-10, which will be mailed upon request.

We have a branch in Los Angeles at 206 N. LOS ANGELES STREET

The pump can be seen in operation at our place of business.

KROGH MANUFACTURING CO.

149 Beale Street, San Francisco

The Why of the Cultivator

By Ernest A. Marris

MOST of us know that in actual practice cultivation keeps the weeds down and the moisture near the surface of the soil, but why it helps the moisture to stay on the upper strata of the ground few of us understand. There is a reason for all things and, once understood, it is easy to practice.

Cultivation stirs the top layers of the soil, allowing the air to warm and to permeate the lower layers, and at the same time enabling the soil bacteria that converts the food elements into available form for the plants to work more efficiently. It also starts the moisture up toward the surface both by capillary action and by the natural law of evaporation.

If you do not cultivate the moisture on top evaporates more and more as the soil becomes more heated, dry and hard. The closer you can keep moisture to the surface the better growth your crop will make, and the larger returns you will get. By the word "crop" I mean anything you are growing, from vegetables to fruit.

When to cultivate depends on the kind of crop, on the soil, on the exposure of the land, on the temperature, on the winds, on the amount of rain and when it falls each season.

On irrigated land cultivate after each irrigation when the ground is dry enough to form a blanket of fairly dry, crumbly soil.

On grain lands cultivate with the harrow, setting the teeth backwards, after the grain is from six to nine inches high. Once is usually enough. Rolling also helps grain.

On non-irrigated land get into the field as soon as you can see the rows and cultivate as close to the plants as is safe. Use the narrowest shovels you can get on your cultivator and set them to dig lightly into the soil. If the ground is weedy put on the weed cutters and go over the field again. Regulate your times of cultivating after this by the conditions of the weather. When the moisture is leaving the surface get busy with the cultivator.

Should showers come late in the season watch out for weeds. Late rains are usually followed by warm days. That makes the weeds fairly jump up out of the ground. Do not get caught. Get into the field as soon as the weeds can be noticed.

When after the last rains have come and you have an ideal blanket of dry, loose soil two or three inches deep and the crop is coming along well, put wide shovels on your cultivator and stir and turn over the surface as often as you can without undue expense.

Orchards should be thoroughly and deeply cultivated after harvest in order to save every drop of moisture for the trees when they are exhausted from producing their crop.

The character of the soil makes a difference in the method and time of cultivation. Light upland soil, especially if it is at all clayey, must be cultivated oftener and sooner after planting than the heavier lowland soil. The exposure of the land, and its slope, may change conditions, requiring more frequent stirring. It is well to stop work during real hot, drying weather, as the moisture evaporates rapidly and the benefit secured may not be worth the labor. The only exception for working then would be for killing weeds.

When operating the cultivator always take ample room at the end of the rows to turn. When making the first cultivation run as close to the plant as you dare. Set the machine narrow so that you will only have to watch one side and go twice in a row. For the second cultivation set the machine to clear both rows and go deep into the soil. After that narrow up the machine and put on one wide shovel. For stirring and turning over the dust blanket use only the wide shovel, but be careful not to cut any of the feeder roots. This last hint applies to both one-horse and two-horse cultivators.

The cultivators should be easy and quick of regulation, so that they can be swung to catch a weed or to miss a plant that is out of line, or to lift it out of the ground or made to dig deep in a hard patch.

The disc harrow, in its many forms, is best for cutting up and pulverizing the ground in the spring, and by using an orchard extension is good in orchard work. After the spring work is done the lightest implements consistent with strength are best. The less weight of team or tool that passes over the ground the less compact the soil becomes, and the better the results.

Succotash Fodder

There is food for meditation, in a glance at the hundreds of acres of bean vines that were disked under in five counties of southern California this year because of the fact that the pods did not fill. Had the bean farmers of those counties, who experienced a crop failure because of over-watering or unfavorable atmospheric conditions, followed the example set by the bean ranchers of Michigan, the loss on beans would now be counted as gain.

When the farmers in Michigan found that their bean pods had failed to fill, they worked out a plan to save the crop. Some had soy beans and others had limas. It made no difference. The pods were not filled, but there was a heavy growth of vines. So the bean men decided to manufacture the vines into succotash ensilage.

It was time to fill their silos with green corn, so they sent wagons into the bean fields and to every three loads of corn they hauled two loads of green bean vines, and the succotash was made by pitching the vines and the corn into the chopper simultaneously.

The corn crop was poor at best, because the stalks were short, and the legume vines made a fine green filler. In the opinion of the best farmers and dairymen of the Peninsula State they have their silos filled this year with a product far superior to straight corn ensilage. It will produce more milk, and the stock will eat it better, for the succotash has already been tried out, and the results have proven highly satisfactory.

Southern California ranchmen gained a great deal of good fertilizer by disking their green vines under but they would have realized a bigger profit by making ensilage of the vines or by selling them to cattle owners for use as succotash fodder.

Cleanliness of Cement

A cement trough for the hog lot is one of the greatest little improvements about the farm. It is easy to make, easy to clean, never gets out of order and is readily disinfected. You can build it yourself. Another and better arrangement is to have an automatic watering device with a tank made of galvanized iron, mounted on a sled, and movable from place to place.

Hitching a Horse

Back end to is the way to hitch a horse out where the wind is blowing. When they are loose so they can do as they like you never saw a horse stand facing a storm.

Forkner Orchard Cultivator

Does more work with less draft and leaves a better surface mulch than any other cultivator made.

It Works Right Up To Your Trees

Cultivating the entire surface beneath low branches without disturbing boughs or fruit. Write for catalogue and free book "Modern Orchard Tillage."

LIGHT DRAFT HARROW CO., 603 Nevada Street, Marshalltown, Iowa

"Pretty Good Job, Isn't It?"

"Nothing much to do but view the remains. We'd have had to worry at it for days if we hadn't used dynamite. That's one big point about

Hercules Dynamite

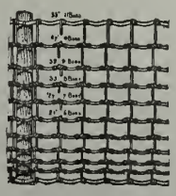
—it's quick and its easy to clean away the stump afterwards. Its cheaper too —you don't have to board a big crew of men and horses.

"Plenty of farmers have stump land lying idle that would be worth money to them if they'd use Hercules."

Send for free booklet "Progressive Cultivation" for valuable facts concerning the use of dynamite on the farm. Address Dept. No. 52

HERCULES POWDER CO.

Chronicle Bldg. San Francisco, Cal.



KOKOMO STEEL WIRE FENCE

Either square of diamond mesh, FOR POULTRY, HOG OR STOCK USE. Many styles to select from. Satisfaction guaranteed. Send for Catalogue with net factory prices.

California Anchor Fence Co.

Market and Aurora Streets - - - - - Stockton, Cal.

MARTINEZ NURSERY

ESTABLISHED 1884.

Offers the following varieties in strictly No. 1 Trees; 25,000 Bartlett Pear, 10,000 Apple (leading varieties), Autumn and Winter Pear, also Plum, Prune, Peach, Apricot and Almond Trees, Grape Vines, Ornamentals, etc. Price List on application.

THOS. S. DUANE, Prop.

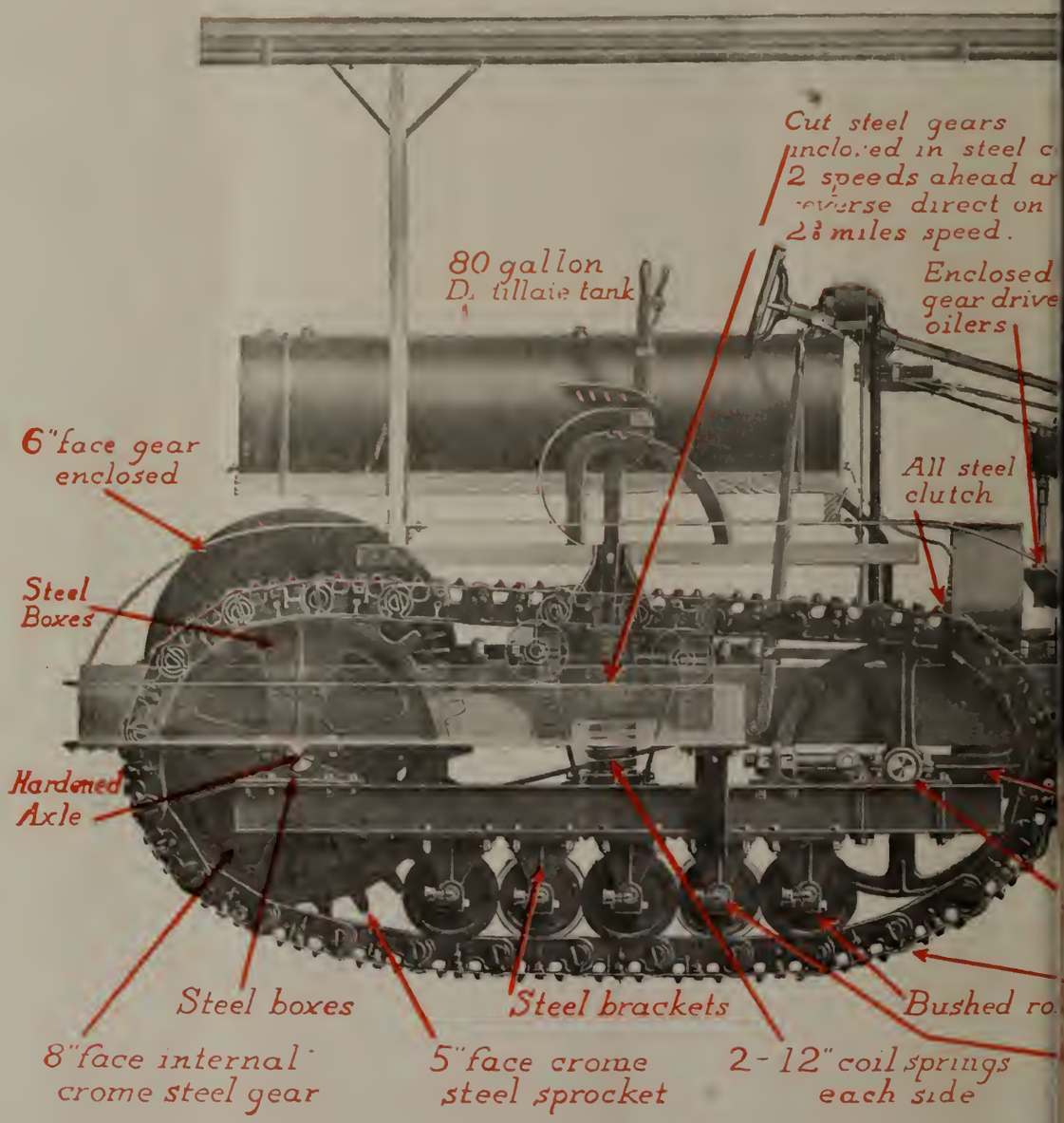
Martinez, Cal.

"Orchard and Farm" guarantees the reliability of its advertisers.

• C. L. BEST • GA

Gold Medal
California State Fair
Sacramento 1913

The C. L. B. 70 H. P. Track Layer will be exhibited a on February 19th, 20th and 21st, and at Marysville o will be prepared to demonstrate the absolute superiori



This Transparent View of the Complete C. L. B. 70 H. P. Track Layer Tractor Will Conv

The C. L. B. Track Layer will make continuous turns, **loaded**, as short as any traction engine on the market.

Plow, Harrow, Seed, Harvest, Ditch two-thirds cheaper than it is possible to do with mules.

Both tracks on a C. L. B. 70 H. P. Track I are pulling the same, whether going straight a or making a turn, thereby providing greater cieney. No other Tractor of this type does this

For Further Particulars, Data, Booklets r

C. L. BEST GAS TRACTION CO.

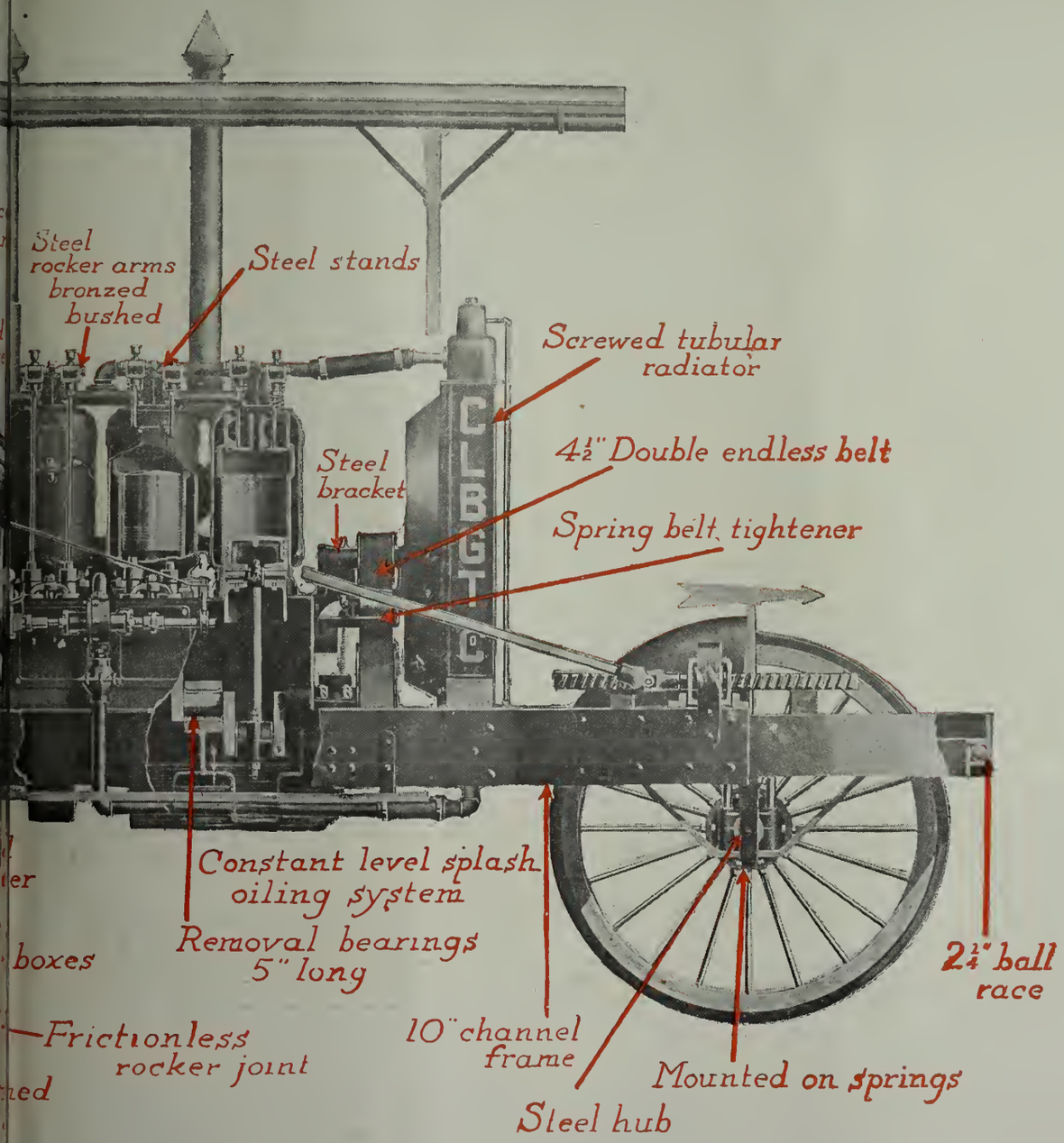
• 105TH • AVENUE • OA

COOPER ADVERTISING CO.

TRACTION · CO.

ifornia FARM POWER DEMONSTRATION at Fresno
5th, 6th and 7th. At those places and on those dates we
r Tractor over any other tractor manufactured.

Gold Medal
California Land Show
San Francisco 1913



echanical Mind More at a Glance Than Would Pages of Description. A Careful Study Is Invited.

The C. L. B. 70 H. P. Track Layer eliminates the twists and strains common to the type which only pulls with **one track** on the turn.

The eight-inch face internal gear drive on a C. L. B. 70 H. P. Track Layer, with its eight-inch face driving pinion, does the same work as second motion chain drives. Hence the C. L. B. 70 H. P. Track Layer has **only two moving parts** in its internal gear, against approximately forty moving parts in other track laying machines.

ecific Information, Call or Write—Better Call

05th Avenue, Oakland, California

AND · CALIFORNIA ·

Value of Sheep on the Farm

SHEEP will increase the fertility of the soil if they are handled properly. To do this they should not be permitted to crop off the grass too closely, which they will do if the pasture is overstocked or if they are kept too long in one field. Sheep manure, with one exception, is the most valuable of all farm manures. It is thinly and evenly scattered over the ground and does not produce a rank growth in spots of the pasture as do other manures. The manure is also worked into the soil by the sharp hoofs of the sheep, so that it is not washed away but becomes available as plant food. This quality has well earned for sheep the title of "Golden hoof." In England land which during Queen Elizabeth's reign produced only 6 bushels of wheat per acre has been made to yield 30 bushels at the present time by the use of sheep. Better cultural methods may be the cause of a portion of this increase, but without doubt the sheep are responsible for the greater part of it.

Another equally important way that sheep increase the productivity of the land is in their destruction of weeds. By eating the weeds they make more room for the cultivated crops and increase the supply of plant food and water available for them by preventing the weeds from using it. No other class of livestock, with the exception of goats, will eat as many weeds as sheep. By converting these waste products into wool and mutton they are a source of profit to the owner.

It has been estimated that sheep will eat 90 per cent of all troublesome weeds. They are, in fact, commonly used in cleaning up weeds from fields, fence rows, road sides, stubble fields and corn fields. The common belief among farmers is that weeds eaten by sheep are so broken up in the digestive processes that the seeds will not germinate after passing through the body as in the case of other livestock. However, weeds are rarely permitted to go to seed if enough sheep are turned in the field while the weeds are young and tender.

In some investigations carried on by the Canadian Government among a considerable number of sheepmen to determine the kinds of weeds eaten by sheep, it was generally agreed that sheep would consume all but a very few extremely unpalatable ones, such as mullein, Scotch thistle, etc. Upon inquiry as to the specific kinds eaten, one farmer replied that he could not give any definite information on the subject as the sheep kept his farm so free from weeds that he could not see what kinds they actually ate.

Where sheep have been kept, but where for some reason they have been disposed of, a striking difference has usually occurred in the appearance of the farm. Weeds have sprung up and grown where they had formerly been kept in check. There is no better solution to the weed problem than a flock of sheep.

In establishing a flock it is better for the farmer to start on a small scale, unless he has previously had experience. When one is dealing with small numbers, a mistake in management or an error in judgment is not of so great importance as where larger numbers are involved. Starting with a small flock requires less capital also.

The farmer's sheep should be a wool and mutton sheep, with emphasis upon mutton. This "dual purpose" sheep, if the name be permissible, is a proved success, and it is already represented in some of the breeds. The best type is the most profitable combination of wool and mutton.

Cattle-Feeding Experiments

WHAT is the most profitable way to fatten cattle for market?

Extensive feeding experiments with beef cattle to answer this question have been arranged for by the Animal Husbandry Division of the University of California, and two of the largest livestock companies of the Pacific Coast.

One set of experiments, in which sugar-beet pulp is the base ration, is being carried on at the Bloomfield ranch of Miller & Lux at Gilroy. Here four carloads of steers are being experimented with. Different amounts and combinations of roughage, including alfalfa, barley and rye grass hay, are being fed in conjunction with beet pulp, with a view to determining which of the rations may be most profitably fed.

The more extensive experiments are being conducted at the feeding station of the Western Meat Company at Lovelock, Nevada. Many thousands of head of beef cattle have been fattened annually at this feeding center, but in the past alfalfa only has been fed, and the results have been considered satisfactory. With the upward trend of prices of meat, however, the question of the advisability of feeding grain in connection with alfalfa has become a live one, and this year for the first time grain is being fed by the Western Meat Company. The work is being conducted experimentally and in co-operation with the University of California, whose representative is in charge of the weighing of feed and cattle and the keeping of the records of the work. Six lots of steers averaging 225 head each are being fed on different grain rations. Corn, barley, cottonseed meal, dried beet pulp, and Sperry feed are being offered to the various lots, and for comparison other weighed lots are getting alfalfa only. In one case the hay is fed long and in another it is chopped.

It is seldom that it has been possible for an institution to take part in such extensive experimental work as this and the results are being anticipated with great interest. That the new status of the meat market of the country will call for improved methods of feeding on the Pacific Coast is a foregone conclusion. That these experiments may help to blaze the way is hoped.

Animal Nutrition Department

A new department of Animal Nutrition has just been established by the University of California. To head this important work the Regents have called Professor F. W. Woll of the University of Wisconsin, one of the most distinguished authorities in America on the feeding of dairy cows, the improvement of production in dairy herds, etc.

Watching New Horses

Horse owners should be particularly watchful of new horses taken into the stable, as they may have a mild form of glanders or farcy, both of which are incurable, deadly and extremely contagious to horses and to human beings as well. A horse with a running nose may be as dangerous as a mad dog.

Salvador Stock Farm
Shire Horses

If you expect to be in the market for a stallion and want a good one, it is time you looked into the matter.
HENRY WHEATLEY, Napa, Cal.

America's Leading Horse Importers
PERCHERONS

A Famous Prize Winner. One of Our Recent Importations.

Our recent importation arrived at our Oakland Stables December 13. At the International Live Stock Exposition, Chicago, December, 1913, our stallions won two gold medals, two championship ribbons, two second prize ribbons. There were over 600 Percherons exhibited at this great show.

IF YOU WANT THE BEST, LET US HEAR FROM YOU.
McLAUGHLIN PERCHERON COMPANY
Kansas City, Mo. Oakland, Cal.

EUREKA HARNESS OIL

MICA AXLE GREASE

Standard Stable Products made by the
Standard Oil Company
SAN FRANCISCO (CALIFORNIA) SAN FRANCISCO

Economy in a Round Barn

THE round barn is a great saver of expenses. Not only is it much cheaper to construct, considering the space available, but the work can be done in a round barn much more easily than in one of any other shape. The accompanying photograph shows a round barn owned by a farmer of Sonoma county, California.

The round barn provides many conveniences and is economical in construction.

This barn is not perfectly round, but is 16 sided. It is a little easier to construct with 16 sides and the effect is practically the same as if it were round. The barn is built on a side hill and has a large basement, which is used entirely for manure. When the stalls are cleaned, trap doors are opened and the manure is pushed through these and it drops to spreaders standing in the basement below. There are three of these trap doors, so it is unnecessary to move the litter any great distance.

The main part of the barn provides for 25 horses in single stalls, three large box stalls, and stanchions for 10 cows. In addition to this there is a large open space in the center from which hay and grain may be fed and a driveway which is large enough to admit a load of hay. There is also a large platform on which the grain is stored, and three rooms for the workmen.

The barn is 90 feet in diameter The loft has a capacity for almost an unlimited amount of hay and straw. It is much larger than is needed for the stock kept in the barn. Access is had to the loft from the driveway in the center of the barn and from doors at the outside. The hay and straw is lifted into the loft with a hay fork which runs on a long cable. When the hay cannot be dropped in exactly the right spot, it is allowed to pile up and then the pile pushed over in the direction of the place where it is to be stored.

A novel plan for distributing the hay to different parts of the barn is a set of three chutes. The hay to be fed is dropped into the center area way and from here is pitched into these three chutes, which distribute the supply so that very little walking is necessary when the horses are fed. The cattle all face the center, so their mangers are filled without the use of the chutes.

Handling the Dairy Sire

By John Underwood

WHEN the raising of good dairy cattle is to be taken into consideration the bull is the better half of the herd. In a majority of cases this animal seems to possess and is disposed to exercise a head of his own and, consequently, needs careful management and control from the beginning of his calfhood. I am not sure but that even beyond this period thought should be given to his ancestry in order to possess a knowledge of the traits of character and disposition likely to be developed in the calf.

A vicious ancestry either on the part of the sire or dam will likely sooner or later manifest itself in the young animal and in selecting the one to head the herd this should be carefully guarded against. One special requirement in handling the bull is with reference to his early thrifty growth and proper development.

Good feed and good care are quite essential in order that a decent and well proportioned animal may head the herd and one that will likely leave a good impress on his posterity.

The calf should be dealt with from the start gently, yet firmly, but never in a teasing or bantering way. He should be taught to be handled quietly, to be easily haltered and led by the time he is a yearling and a good ring should be put in his nose to aid in his complete control.

When old enough for service he should not be allowed to run with the other cattle, but be kept in a substantially fenced field or lot. The latter is the best and can be provided in a reasonably cheap and effective manner. My own method is to have a lot consisting of about two acres enclosed with a four-foot wire fence substantially put up on good well set posts, the posts extending eight or ten inches above the top wire of the woven fence which is put on the outside of the posts. On the inside of the posts a barbed wire is placed about six inches above the top of the woven wire fence and one also about eight inches below the same. In nearly every case this will be a sufficient safeguard against fence throwing or breaking out. The lot is well provided with water and shelter and a strong plank fencing gate protected with barbed wire on the inside, which completes the arrangement. I find in my own case this kind of inclosure sufficient to keep under control a vigorous purebred Jersey bull of about 1,700 pounds' weight.

You cannot expect a cow to give large quantities of milk unless she has plenty of feed and quantities of water.

REGISTERED HOLSTEIN-FRIESIAN BULLS

THAT WILL INCREASE YOUR PROFITS

Two of our herd bulls are from 28,000-lb. dams. Butter records average above 1,100 pounds. The only two cows in the world that have produced over 50,000 lbs. milk each in two years. Fifty cows on official yearly test. Fifteen cows, including several 3 and 4-year-olds, have averaged over 700 pounds fat and 20,000 pounds milk. Forty cows average over 600 pounds fat. Fifteen heifers with first calf average 490 pounds fat (600 lbs. butter). Estimate the value of a bull in your herd that will introduce 50 per cent. of this blood in the next crop of heifers. Prices $125 and up. Have something especially fine to offer breeders of registered cattle. Write to-day for information.

Riverside Sadie De Kol Burke. 28,826 Pounds Milk One Year.

A. W. MORRIS & SONS, Woodland, Cal.

"Just Look at this Cream and Butter"

What a pleasure to see the rich yield of your best milkers! But how about the poor milker; have you given her the proper chance? Chances are some part of her system is run down and Nature is using all her energy to sustain life and a semblance of health.

Healthy cows can use *all* their vigor to perform the natural functions of production—and most backward cows can be made healthy by sensible treatment. KOW-KURE, the great cow remedy, is a wonderful cure and preventive of such cow diseases as Abortion, Retained Afterbirth and Barrenness; also cures Bunches, Milk Fever, Scouring, Red Water and Lost Appetite.

Kow-Kure is strictly a medicine, not a "stock food." It makes the cow thrive on Nature's food by toning up the digestive and genital organs. Buy a 50c box and use according to directions on your poor producers. Sold in 50c and $1 package sby feed dealers and druggists. Write for our free publication "Cow Diseases."

Dairy Association Company, Mfrs., Lyndonville, Vt.

DISTRIBUTORS FOR PACIFIC COAST:

Germain Seed & Plant Co., Los Angeles, Cal. Portland Seed Co., Portland Oregon. Spokane Seed Co., Spokane, Wash.

Black Hawk Stock Ranch

For Sale—**SHIRE STALLIONS**, ranging from two years up. Also **MARES** in foal. Breeding and quality unsurpassed. Prices right and inspection invited. Correspondence given prompt attention.

Address

A. W. WARD

Burlingame, Cal.

Make $2000.00 more per Year

You Can Make Big Money With a well machine that makes irrigating wells last and at a low cost. Demand for such wells is unlimited in California and the entire Southwest. The best and lastest machine for this work and this territory is the

IMPROVED POWERS COMBINED BORING AND DRILLING MACHINE

Bores thru gravel, sand and clay like a streak of lightning. If rock is struck it drills thru that. Forces casings perperfectly. One man and one team can run it. You can make $1 an hour for your spare time.

Write today for catalog and EASY PAYMENT proposition.

LISLE M'F'G. CO., Dept. 1, 625 3d St., S. F.

STABLE MANURE FERTILIZER

Write for Quotations. Address

TAYLOR STREET STABLES, North Point and Taylor Sts., San Francisco.

No Slump Feared in Livestock Industry

By H. A. Jastro

THE livestock industry of the United States is an enormous one. Few people realize its magnitude. Mr. H. A. Jastro, the author of the article on this page, and one of the foremost livestock men of the country, made the statement at the recent meeting of the California Livestock Breeders' Association that the money invested in the livestock industry in the United States exceeded in amount the capitalization of the railroads of the Union.

I DO not deem it essential to make any extended statement about the conditions prevailing in the livestock industry in this country, for the simple reason that they can be affected adversely only by an oversupply in those foreign countries that are supposed to have a surplus of meat-food products.

In other words, if the surplus in foreign countries becomes too great to be absorbed readily by England, naturally their products will be attracted to the United States by free trade, but if similar results follow in the livestock industry, as was the case when hides were put on the free list, then we have nothing to fear from foreign competition in this line, because immediately after hides were declared free, so far from attracting foreign hides the exact opposite was the result, for the reason that the price of the foreign hide was raised to prevent those countries from being drained of their heretofore cheap hides into our country.

Even conceding that prices in foreign countries do not advance, which is a remote possibility, the only question to be considered is the condition of the livestock industry in the countries that have a surplus of animals and I can do no better than to enumerate some statistics, as I believe they will dispel some of the forebodings of many of the high-tariff pessimists now engaged in the livestock business.

The number of beef cattle in the Dominion of Canada has gradually fallen from 4,600,000 in 1908 to 4,100,000 in 1912. During the same period Canada's exports of cattle diminished from 151,000 to 61,500, while her exports of beef fell from 2,250,000 pounds to 948,000 pounds. Canada's cattle were shipped mainly to the United States, while her beef is sold in the United Kingdom. The number of head of all kinds of livestock in Canada is about the same per capita as in the United States—namely, one and three-fourths. The conditions in Canada are favorable for the enlargement of the livestock industry, but not any better than in this country. Western Canada has been settling up very fast, the settlers are raising grain and other crops—the same as in the northwestern part of the United States. That accounts for the decrease in livestock there, as it does in this country. Owing to the drouth in Eastern Canada last year there was heavy movement of feeders into this country immediately after cattle went on the free list. That was exceptional, and not likely to be repeated in many years. The probability is that in the future the United States will supply Canada with about as much livestock and meat products as she will furnish to us. The removal of the tariff has resulted in an increase in the price of livestock in Canada, as I predicted would be the case, and Canada is already protesting against the increase in the price of meat food products.

Ever since the beginning of the revolution in Mexico owners who were able to gather and ship their cattle have been sending them to the United States. The importation of cattle from Mexico for 1913 will exceed 300,000 head—the largest number in our history. Many of these cattle paid not only an import duty to the United States, but an export duty to the federal government in Mexico, and sometimes tribute to the revolutionists as well. Mexico has a population of 15,000,000, and is estimated to have between 6,000,000 and 7,000,000 cattle, 4,000,000 sheep and 750,000 swine—less than one meat animal per capita. There is an immense territory in Mexico available for producing cattle, and with stable government conditions that country can be relied on to supply a large number of unfinished or stocker cattle. When the revolution is settled it will take several years for normal conditions to be resumed, and until then we cannot reasonably expect to receive as many cattle annually as were shipped here last year. After the war there will be a keen demand for feeding stock in order to build up the herds to a better standard, and this country will probably be called upon to supply that demand. The removal of duty on livestock will not have the slightest effect toward increasing our imports of cattle from Mexico, or reducing prices here. Her surplus supply would have continued to come here and paid the former duty. Now that the duty has been removed it will be absorbed by the cattle owners of Mexico; or, what is more likely, the Government of Mexico will retain the present export duty. Thus the placing of livestock on the free list will not have any effect on the price of Mexican cattle in this country.

Argentina, with a population of about 7,000,000, has one-half as many cattle as the United States, 29,000,000 more sheep, and only 3,000,000 swine, as against our supply of 60,000,000 swine. For each inhabitant there are about four cattle, and including all meat animals, about seventeen head, compared with one and three-fourths for each person in this country. Argentina now exports more beef than all the other nations combined. For 1912 her exports of meat products, mostly frozen meat, amounted to approximately 1,000,000,000 pounds. In 1911 she exported 261,000 head of live cattle and 105,000 head of sheep. It is more than likely that her exports of live cattle will be discontinued on account of the foot-and-mouth disease. Prices of livestock in Argentina have practically doubled within recent years, and this advance has attracted to the block all classes of cattle.

Next to Argentina Australia has the largest surplus of meat. That country has about 12,000,000 cattle, 83,000,000 sheep and 850,000 swine. Her population is about 3,800,000, which gives an average of three cattle and twenty-five meat-food animals of all kinds per capita. The latest available statistics show that Australia exported, during the year ending June 30, 1913, about 350,000,000 pounds of frozen beef, mutton and lamb. Her exports of meat products average about one-third of those of Argentina. Up to the present time practically all of the exports of meat from Australia have been frozen. They are now preparing to handle chilled meat. Under favorable conditions Australia can supply a much larger volume of meat products for export.

New Zealand has also a relatively large surplus for export. Her population is only about 1,350,000, while latest statistics credit her with having 2,000,000 cattle, 24,000,000 sheep and 350,000 swine. She thus has about one and one-half head of cattle, and about twenty head of all food animals per person. During 1913 she exported approximately 260,000,000 pounds of frozen meat, of which ninety per cent was mutton and lamb. The time occupied in passage from New Zealand and Australia to San Francisco is about twenty-two days, as compared with forty days from the same countries to England. On the other hand, the transportation facilities from Sonth America are better to England and the continent than to this country, all of which should be taken into account.

There are a few other countries with a surplus of meat products, such as Denmark, but their exports are not likely to increase.

Classified according to the kind of exports Argentina leads in beef, with Australia second. In mutton and lamb the exports from New Zealand are greater than from any other country, with Australia and Argentina contending for second place. The United States exceeds all the world in the volume of its exports of hog products.

In order that there may be a clear understanding of the meat situation in the world I will now briefly refer to the condition in the United States. This country is still raising a surplus of meat-food products. The United States has to-day a population of 97,000,000, and approximately 61,000,000 head of swine, 56,000,000 cattle, and 51,000,000 sheep. According to the estimates of the Department of Agriculture this is a reduction compared with 1900 of 1,700,000 swine, 11,800,000 cattle and 10,000,000 sheep, while the population has increased about 20,000,000. From these figures it will be observed that in this country there are about one and three-fourths head of livestock per capita, compared with about the same number per capita in Canada, less than one in Mexico, seventeen in Argentina, twenty-five in Australia, and twenty in New Zealand. Exclusive of semi-civilized countries, the population of the United States is about ten per cent of the people of the world who raise domestic meat food animals and consume them for food. We have within our borders about sixteen per cent of the meat-food animals of the world—vastly more per capita than the average of all civilized countries. For the period from 1897 to 1909 the total value of our exports of meat animals and meat-food products averaged annually from $200,000,000 to $250,000,000—about one-seventh of our total production. For 1913 our exports of these products will amount to approximately $150,000,000 (mostly pork products).

I cannot better describe the world situation as to livestock and meat exports than by the simple statement that the total value last year, at the ports of shipment, of all the meat-animals and products exported from all the surplus countries of the world, except the United States, was less than the total average value of the meat-food animals and meat-food products exported from this country during the period 1897 to 1909, and by the further statement that the total value of all the exports of meat-animals and meat products last year from all the surplus countries to which I have specifically referred was but little more than the value of our exports of these products. For the past year the United States exported a trifle more than 1,700,000,000 pounds of meat-animals and meat-food products, including lard and other by-products of the packing house. While this is a smaller volume than the meat exported from Argentina, Australia and New Zealand, its value was greater than that of the meat exports of those countries combined. The total value of the products of the slaughtering and meat-packing industry of the United States is estimated at $1,600,000,000. Deducting the value of exports of these products last year leaves $1,450,000,000, which is the approximate value at wholesale of meat products consumed in this country. With meats and livestock on the free list I do not believe the value of the meat-food animals and meat-food products likely to be imported into this country during 1914 will exceed $25,000,000, or less than two per cent of the value, at wholesale, of our domestic consumption. It more likely will be under than above that figure.

In considering the probable volume of our imports of meat-products there are several factors which should be taken into account. First, a large part of the meat exported from Argentina, Australia and New Zealand is frozen, and there is a prejudice against frozen meat in this country. Our butchers have no adequate facilities for handling it, and the surplus countries are not prepared to ship their products in the chilled condition. More important than this, however, is the fact that, with our competition added to that of the rest of the world, it is likely that the prices in other surplus countries will be so advanced that it will not be profitable to ship to the United States. The rest of the consuming world needs the meat that can be supplied by Argentina, Australia and New Zealand, and will pay more for the same than we can.

The removal of the tariff on our products ought not appreciably injure the livestock industry, and I want to assure those now in the business, and others intending to embark into it, that the prospects are excellent for a continuance of substantially the present basis of value. Prices will flucutuate up and down, but they will not long remain below the present level.

Convenience for Hogs

If a hog knew how to tell his wants, he would demand a scratching post. Such posts, in the opinion of many hog growers, are not only a source of great comfort to hogs—the picture of a hog or pig scratching himself and softly grunting his content is worth a couple of hours of any man's time in fixing up a pig post—but the post may moreover be made useful in ridding the animals of lice or scaly skin.

A successful California hog grower adopts this plan: Firmly plant a hickory or oak post four inches in diameter in the hog run. Coil a Manila rope around the post as high as a hog stands, and staple it on securely. Then thoroughly saturate the rope with crude petroleum and it becomes an ideal scratching post for hogs and pigs. They rub up against it continually, and oil is fatal to vermin. Kerosene can be used, but it evaporates too rapidly.

Two O.I.C. Hogs

Weigh 2806 lbs.

Why lose profits breeding and feeding scrub hogs. Two of our O. I. C. Hogs weighed 2806 lbs. Will ship you sample pair of these famous hogs on time and give agency to first applicant. We are originators, most extensive breeders and shippers of thoroughbred hogs in the world.

U. S. Govt. Inspected Herd

Write for Free Book, "The Hog from Birth to Sale."

FREE—One 15-oz. can of our celebrated Silver Live Stock Powder for free trial. Send for it today.

THE L. B. SILVER CO.
1538 Vickers Building Cleveland, Ohio
Established 1863—50 Years' Success

Once upon a time a farmer, seeing an ad for a cheap telephone, ordered one.

Did he save money?

In due time the phone arrived and was unpacked. It looked pretty good, the farmer thought. He installed the phone at once.

Did it work O. K.?

Yes it did—at first; but as the days and weeks and months wore by this farmer began to realize that his telephone was not so cheap after all—unreliable service and repairs, due to cheap material and poor construction, made that telephone in reality a high priced one.

This is the experience of many, many buyers.

If you don't know, find out all about Kellogg—from users—our customers are our best advertisement.

Write today for books on real telephones and line construction.

Mention this paper.

Kellogg Switchboard & Supply Co.

San Francisco Office
86 3rd St.

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, always fresh and reliable, they are used by over 80 per cent of California and Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.

10-dose pkge Blackleg Pills.....$1.00
50-dose pkge. Blackleg Pills..... 4.00
Cutter's Blackleg Pill Injector.. 1.50

Pills may be used in any injector, but Cutter's is simplest, strongest and easiest to use.

Every package dated, unused pills returnable for free exchange for fresh after date on package. Do not use old vaccine, or of uncertain age (ours or any other) as it affords less protection than fresh.

Discounts: 250 doses, 10 p.ct.; 500 doses, 20 p.ct.

Insist on Cutter's. If druggist doesn't stock, order from Laboratory, giving address plainly. We prepay charges and ship promptly. Send personal check or M. O.

THE CUTTER LABORATORY, BERKELEY, CAL.

When answering advertisements, please mention "Orchard and Farm."

The Evolution of the Guernsey

—By W. H. Caldwell, Secretary American Guernsey Cattle Club—

THE last few years have brought about many changes in the dairy cattle world. Not only has the illusion of the profitable and unprofitable dairy cow been driven home close to the hearts of the dairyman, but the consuming public are quicker to discern the difference between the low and the high grade of dairy products.

As these points are better appreciated, the real merit of the Guernsey cow is better seen. It is because of the two particulars of economical production and high grade products that she has so rapidly come to the front.

The foundation for the breed was laid amid the surroundings of the economical dairy conditions prevalent on the Island of Guernsey.

The introduction of the Guernsey into the country was induced by the realization of the high class of her dairy products. First she came into the hands of the private estate owners who were desirous of the rich and highly natural colored products for their own use. Gradually this desirable feature so characteristic of the Guernsey was realized and she was sought for.

For many years the Guernseys, being few in number, were held on the private estate and little was done to popularize them, there being a ready market for the surplus among the friends of their owners.

The first real public introduction of the Guernsey was at the World's Fair in 1893. There the superior quality of their products was apparent to all who came in contact with it.

This with the Pan-American model breed test at Buffalo in 1901 was possibly the best public rating which the products of the dairy breeds have ever had.

At Buffalo the breed test was the only one ever held at a public exposition where all the dairy breeds were represented. At Chicago the Holstein and Ayrshires did not compete. At St. Louis the Ayrshires and Guernseys were not there. In the Buffalo tests the Guernsey cows not only made butter at the least cost per pound, but returned the greatest profit for every dollar invested in feed.

During the entire time of the test there was exhibited in a glass case a sample of the butter made from the milk of each herd. This was made fresh once a week and submitted to an expert. The average score shows that the Guernsey butter ranked highest on flavor and color, thus being the best quality butter.

From these averages it will be seen that the qualities that have been claimed for the products were noticeable here. The desirable flavor which has been so highly prized wherever Guernsey milk and cream have been sold we find in the butter. It is not expected that the ability of the Guernsey to color her milk and butter is so pronounced in the summer season with green food at command, as compared with some of the other breeds, but it was readily seen in the samples of butter exhibited and in the scoring. The contrast would undoubtedly have been much greater in the winter season on dry land.

The high rating of the products of the Guernsey is not alone in this country. An observer in England remarked that he had often seen one or two Guernsey cows tethered or kept on many of the estates in England, while the main herds were of other breeds. When he inquired why, this was the reply that came: "Oh, they are kept to supply the milk and cream for the Manor house; the family wish not only richness but natural color, and there is a belief that with this natural, well colored product, there is a particular flavor that is highly prized."

The one thing paramount in the mind of the dairyman is the question of economical production; from what class of cows can he get the greatest return for the amount of money he invests in food. In this respect let us see the record which the Guernsey cow has made within the last decade:

First we find in the New Jersey Experiment Station Report for 1889-90 the following concerning the cost of butter produced by the different breeds:

Mature Cows.	Cost of food per lb. of fat in cents.
Three Guernseys	.1530
Three Jerseys	.1790
Three Holsteins	.2240
Three Ayreshires	.2060
Three Short Horns	.2080

In the New York Experiment Station Trial for 1891-92, we find the following for young heifers:

	Cost of food per lb. of butter in cents.
Two Guernseys	.1470
Three Jerseys	.1670
One Holstein	.2204
Four Ayreshires	.2303
Two Holderness	.2204
Two Devons	.2287

The highest continuous long distance record is held by Spotswood Daisy Pearl 17696, A. R. 790, with 30290.80 lbs. milk; 1547.97 lbs. butter fat. Average per cent 5.11.

Great as has been the growth of the Guernsey in popular favor, and prosperous as have been her interests, there is a sense of pride and satisfaction to those who have been associated with the breed that the ground she has gained has been won by her own honest efforts as a dairy cow. She has led by measuring her efforts by the critical test of a dairy cow, what she can do in the year race, not what the butter maker might do with her products in short time trials. Records based on butter fat production for extended periods of time.

Returning the greatest amount for $1 invested in food, making butter at least cost per pound, giving dairy products of the highest natural color and flavor, giving to the private estate that milk, cream and butter, pleasing in appearance and excelling in usefulness, she and her grades being most universally the favorites in the high-class dairies of our large communities, such, friends, is the proud record of the Guernsey cow's advancement and on such she appeals for recognition and support by the public.

Disinfecting Cow Stables

Disinfectants cannot destroy germs if they do not come into direct contact with them. Disinfectants should be applied in sufficient quantity thoroughly to saturate the surfaces, after the adhering particles of dirt are removed. In the application of the disinfectant in cow stables it is well to use a broom or stiff brush and thoroughly scrub the floor, feed troughs, stanchions and lower parts of the walls.

The solution can be applied to the ceilings and upper parts of the side walls with a spray pump and must be carried into any crevice and recess into which dirt can enter.

Danger of Overchurning

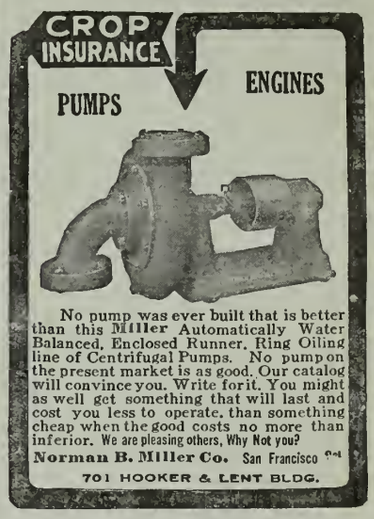
Overchurning, that is, churning until the butter forms in large lumps, increases the moisture because a considerable amount of buttermilk is incorporated. This buttermilk is usually detrimental to the keeping quality of the butter and should not by any means be churned into the butter.

One Sack of Our Fertilizer Equivalent to One Ton of Manure.

Make Your Soil More Productive

Use the modern method of handling manure. Use GYPSUM in your stable—eliminates flies and retains the essential elements, usually lost in the form of gases. It counteracts black alkali and turns it into plant food. Corrects acidity in soil. Collects moisture from the air. Increases every crop—excellent for alfalfa. We also sell Blood Meal, Ground Phosphate Rock, etc. WRITE FOR QUOTATIONS.

STANDARD FERTILIZER COMPANY, Inc.
323 North Los Angeles Street, Los Angeles, Cal.



No pump was ever built that is better than this Miller Automatically Water Balanced, Enclosed Runner, Ring Oiling line of Centrifugal Pumps. No pump on the present market is as good. Our catalog will convince you. Write for it. You might as well get something that will last and cost you less to operate, than something cheap when the good costs no more than inferior. We are pleasing others, Why Not you?

Norman B. Miller Co. San Francisco Cal
701 HOOKER & LENT BLDG.

FOR THE "LAND'S SAKE"
BUY A
BOSTROM IMPROVED

Price $15

which has TELESCOPE enabling you to read the Target over 400 yards away, and

TERRACE, DITCH, TILE DRAIN, IRRIGATE

your land properly, and save surveyor's fees. It is sold by up-to-date hardware and general merchants everywhere, and guaranteed to be the most

SIMPLE, ACCURATE, DURABLE AND COMPLETE

outfit ever made for all farm work. If your dealer hasn't one in stock, he will order for you from a nearby hardware jobber.

Write today for description of Level, and details of our MONEY BACK GUARANTEE.

BOSTROM-BRADY MANUFACTURING CO.
109 Madison Ave., Atlanta, Ga.

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.

Largest pipe works in the West.

WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

Coulson's
Chick Foods
will help you raise and increase your flocks. Try our Complete System of Feeding as described in our free book "Chickens."
Coulson Co
PETALUMA, CAL.

NEVER Such Poultry and Egg DEMAND
—before in poultry business. *Shortage* of beef, pork, mutton makes this poultrymen's *bonanza year*. Poultry profits *high*. But use *right tools*—get *full measure* success.
CYPHERS INCUBATORS and BROODERS
World's Standard. Self-regulating; self-ventilating. Fireproof; insurable. Highest records for *big, continuous hatches*. Get Cyphers Company's 244-page catalog and poultry guide *before you buy*. 8 vitally helpful chapters. Address *today*.
CYPHERS INCUBATOR CO. Dept. 78
2127-2131 Broadway, Oakland, Cal.
Buffalo, N. Y., New York City, Chicago, Ill., Boston, Mass., Kansas City, Mo., London, Eng.
Write For Big Free Book

Get Eggs Now
You can make your hens lay and have eggs to sell *now* when eggs are high by using
Conkey's Laying Tonic
A Regulator and Tonic. Puts whole flock in condition. Satisfactory results or money back. 25c, 50c and $1. In pails $1.60 and $3.
Save Fowls from Roup
For sneezing, coughing or moping fowls put in the drinking water
Conkey's Roup Remedy
A Preventive and Remedy. Fowls take their own medicine. Keep on hand and save your flock. 25 cents, 50 cents and $1.00
The G. E. Conkey Co., Cleveland, O.

You Should Know About Fairmead Lands
Where alfalfa produces eight tons per acre per year.
Where olives, figs, peaches, etc., pay big.
Unlimited water. Rich, easy-to-work soil.
Good neighbors and schools. Splendid markets.
19,000 acres now selling fast in 10, 20, 40 acre tracts.
Bottom prices—easy terms.
Send now for free booklet, "Fairmead for Farmers."
Co-Operative Land & Trust Co.
Owners
593 Market St., San Francisco, Cal.

Poultry Problems

—By Prof. M. E. Jaffa—

PLEASE give me the important points bearing on the construction of a corrugated iron house for sixty hens in this location.—F. & D., Live Oak.

In the construction of a corrugated iron house for poultry, the same essentials would have to be considered as in the construction of a house of any other kind—good ventilation without draughts, etc., etc. It is a great question, however, whether the corrugated iron house is to be advised in the hot interiors. From a sanitary standpoint, the corrugated iron house is no doubt superior, but on the other hand there are disadvantages with references to heat, etc., which must not be overlooked.

Accurate dimensions for a house could not be given unless it were known whether or not it is intended to have included in the house a scratching shed, nests, etc., or whether it is merely intended to have the house serve as a roosting place for the hens. The dimensions in the two cases would be entirely different. The writer is of the opinion that there should be a "scratching shed" included in every house. Again whether or not a floor should be included in the house would depend upon the size of the place and whether or not the house could be moved from place to place. If the latter were the case, then no floor would be necessary, as the house could be periodially moved from spot to spot. If, on the other hand, the intensive plan is to be adopted and a floor necessary, the case is entirely different.

IF a person has plenty of horse meat with very little or no cost at all, and intends to raise poultry, can he depend on this meat to save on other kinds of food?

And what will be the maximum that can be fed to a chicken of the size of Plymouth Rocks and Orpingtons, for egg production, how much for capons, and for small chicks, to make a rapid growth for market purposes.

And what kind of grain for the best combination with the meat.—A. U., Fort Bragg, Cal.

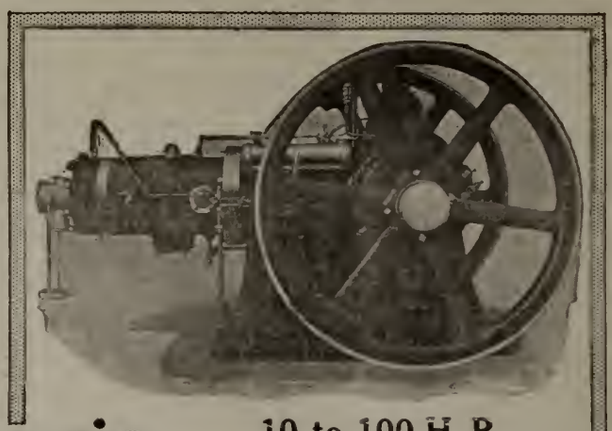
Theoretically there is no objection to the use of horse meat. Fresh, lean horse meat will supply the necessary animal protein as well as fresh lean beef. If the meat is not sound or in any way tainted, the case is different and it should never be used. If the meat is to be used fresh and mixed with the mash, it should be minced. In this way there is not the same opportunity for practicing the selection habit. In other words, if the meat is in lumps some fowls will get much more than others, whereas if it is minced and homogeneously mixed with the mash there is no such opportunity offered.

With reference to the amount used, it might be said that in mashes where 1 lb. of beef scrap is recommended 3 lbs. of fresh lean meat could be substituted therefor. What to use in the mash would depend upon the foods which are available in the district. Mashes can be made from a variety of ingredients or from a few. Two samples of good mashes are as follows:

Bran	3.0 lbs.	Bran	5.0 lbs.
Shorts	2.0 lbs.	Shorts	5.0 lbs.
Corn meal	2.5 lbs.	Soy bean	2.0 lbs.
Oil Cake meal	1.0 lbs.	Beef scraps	2.5 lbs.
Beef scrap	1.7 lbs.	Ground bone	1.0 lbs.
Bone meal	.7 lbs.		

In place of the beef scrap mentioned here, 5.5 lbs. of fresh meat could be used in one case and 7.5 in the other. For heavy weight fowls about 15 to 17 lbs. of mash per 100 hens, per day, would be sufficient.

For the grain ration it is best to have a mixture of grains. The small corns may be used if prices warrant. A good mixture would be wheat, barley, and cracked corn.


Muncie Oil Engine
10 to 100 H. P.
The only engine in these sizes, successfully operating today in California, on California fuel oil.
The Muncie runs whenever and wherever you want it to run. It has extra large bearings, which are enclosed. No carburetors, battery, coil, magneto, gear, or cam. The Muncie has only two essential attachments—the governor and the fuel pump.
The Muncie holds the record for turning over, without stopping, 42,120,000 times—without carbonizing, repairs, adjustment or breakage.
Don't let the failures of other so-called oil engines prevent your full investigation of the Muncie. The Muncie is now giving steady, sturdy, and economical service throughout California
Let us give you the name of a Muncie user in your locality.
Catalogue Upon Request
California Hydraulic Engineering and Supply Co.
72 Fremont St. San Francisco
CHESCO IRRIGATION MACHINERY

For CULVERTS, TANKS, SILOS AND ROOFING Use
APOLLO
BEST BLOOM
GALVANIZED SHEETS
Careful manufacture and good galvanizing insure maximum service from APOLLO Sheets. APOLLO Roofing and Siding Products are sold by weight, by leading dealers. Send for "Better Buildings" booklet.
AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg., Pittsburgh, Pa.

Ask the First 12 Men You Meet
which is the "one best" wagon built, and at least ten of them will say "The Peter Schuttler." All wagons look good when the paint is fresh, but it makes a lot of difference what is under the paint.
Old Reliable Peter Schuttler
The One Best Wagon
is made in the honest, careful, old fashioned way—in the most modern and completely equipped wagon factory in the world.
Peter Schuttler Wagons cost a little more than the "almost as good" kind but they save much more than the difference in first cost in time, horses, harness, repair bills and trouble.
Write for Booklet About Peter Schuttler Roller Bearing Wagons
Peter Schuttler Company, Chicago
The World's Greatest Wagon Factory Established 1843

"Orchard and Farm" guarantees the reliability of its advertisers.

The Care of Baby Chicks

—By Prof M. E. Jaffa—

SUCCESS in the care of baby chicks and the rearing of them to the stage of profitable layers depends upon many elements which antedate their life in the brooder. Oliver Wendell Holmes has said that any disease is curable provided the doctor is called in time, but that to be in time would often necessitate his having been called in for the grandfather.

It is just so with chicks. The fullest success depends upon the vigor of the stock from which the eggs were obtained, the care they have had, the method of incubation, etc. These elements belong to the unalterable past when the baby chick once begins to "peep"—and yet there is still time to counteract some of the mischief, or at least to refrain from making it worse.

The expression "baby chicks" always suggests a brooder, but the first day of their lives should be spent in the incubator and it is here that the greatest mischief is often done. The opening of the door of the incubator to help one struggling chick out of its shell has often chilled the chicks already hatched and dried out the lining membrane of the egg enough to interfere with the hatching of many others.

Pure air is required, however, and the ventilation must be carefully attended to. Toward the end of incubation the air space inside the egg is small and the air that surrounds the shell must be pure. The chick often has a hard struggle to force its way out of the shell and enters the world in a state of great exhaustion. For this reason the conditions that he first meets must be favorable for restoring energy—for increasing vitality. There are no better agents for this purpose than heat, oxygen and rest, and it is necessary to see that he has the proper amount of each. The ventilator should be opened a little more the last day, and more still after the chicks are out.

When the hatching is over the room in which the incubator stands should be warmed to prevent the chilling of the chicks during the "cleaning up process." This is a critical time for novices. Many are tempted, in spite of all warnings to "help the chicks out of the shell." The advice given many years ago to go at the incubators with a basket in one hand and a bucket of water in the other, was sound and good. The chicks that have not been able to force their way out of the shell are not worth saving. It is true there are many different causes, and often the chick may not be responsible, but these cases are so few compared with the large numbers where the chicks are weaklings that it does not pay to run the risk unless a man can afford an isolation hospital for his weaklings, where extra cars may make up for past errors. The experiment might be interesting.

The chicks should be kept in the incubator for 24 hours at a temperature of 103 degrees and with plenty of ventilation. In the meantime the brooder is made warm and comfortable for their reception. It is not enough that the temperature should have reached the right degree—about 98—but it must have been maintained at that even temperature for several hours before it can be labeled "ready." The heat can be gradually decreased—a degree every day or two—so that by the time the chicks are 6 weeks old they shall require no more coddling.

The first day or two in the brooder are critical days and the babies require almost individual care. At this point it is not necessary that the percentage of chicks raised should be a demonstration of nature's law of the survival of the fittest. Many modest, gentle, unobtrusive little chicks that are really fit to live are pushed and crowded and jostled away from feed and water by their more lusty and pugnacious companions. These are the ones, too, that will be found under the pile if there is undue crowding. By watching carefully during the first few days and removing the less lusty ones to quarters of their own, many lives may be saved.

Chicks require no feeding for 36 to 48 hours after they are hatched—some authorities even extend the fast to 72 hours. It is in truth not a real fast, but a continuation of the same method of nourishing that has obtained before hatching. The yolk, which has furnished all the food material out of which the bone and tissues of the chick have been formed is not all absorbed at the time of birth. If the chick is fed, per mouth, before the remainder of the yolk is used, absorption of this material stops and trouble results.

Water, they may have, and some of them seem to need it badly. Many will not seem to notice the drinking fountain or to have an instinctive knowledge of what water is for, and yet if their bills are once held down to the water, they drink greedily. It is also necessary to teach many of them to eat. The mother hen does this. How often one sees the chicks more disposed to run about and frolic in the presence of food than to eat, until the hen taps on the ground with her bill, and attracts their attention to it. When incubation and brooding has deprived the babies of a mother it is important that as good a substitute as possible be provided and that her methods be imitated closely. If the caretaker will tap on the brooder floor with his finger, he will be rewarded by seeing the chicks bend their heads and pick up the bits of food which lay unnoticed before.

The chicks that do not exercise after feeding or drinking should be put under the hovers immediately and not allowed to stand around and get cold. By this method they will have the first chance at the warmest place before the coming of their more active mates. It is only necessary that they have a chance to eat or drink, it is not necessary that they do so. Many chicks need only warmth and sleep for several days. It is necessary, however, to be sure that each chick has swallowed some good sharp grit before he is trusted with any hard food. For this reason it might be said that before any real food is given the baby chicks should have sand, bone meal and chick grit and then they are ready to eat.

Saving the Early Layers

Hens that lay but few eggs are animal weeds. If we breed from them they are more than likely to yield daughters that will be weeds also.

Farmers and small poultrymen who cannot afford to use trap nests can pick out the pullets in September and October that are about commencing to lay, and save a pen of them for next season's breeders.

The pullets that commence laying early usually continue to lay well. In this way most of the weeds can be kept out of the breeding pen.

Pullets Best Layers

Don't expect to get egg record yields from old hens. Pullets are always the best layers. The high productive period of a pullet as regards egg yield is from six months to eighteen months of age. If you are breeding for market purposes sell the hens at the beginning of the second moult.

During the Moulting Season

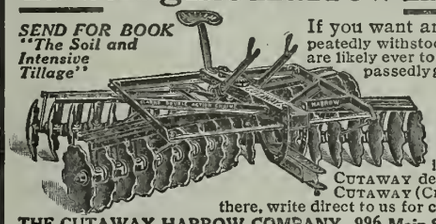
Do not neglect your hens. Feed daily GOLDEN EAGLE EGG FOOD, either as a dry mash, or in a crumbly form. Bring them through the moult quickly and keep them in good condition during this period.

DON'T PUT OFF TO-DAY,
AS THE HENS MAY CEASE TO LAY

Golden Eagle Milling Co.
PETALUMA CALIFORNIA

This Engine Harrow Has Made Good

SEND FOR BOOK "The Soil and Intensive Tillage"



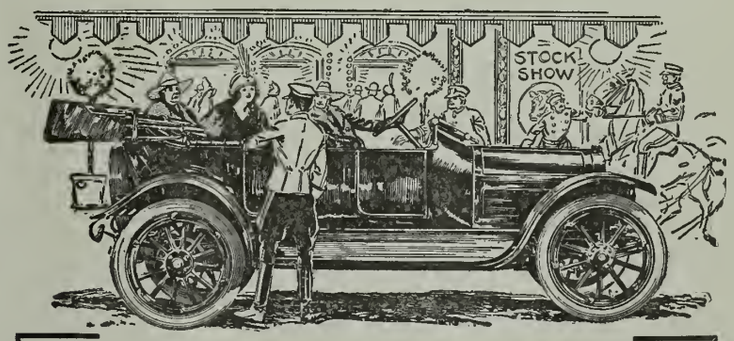
If you want an engine harrow that has repeatedly withstood abuse far greater than what you are likely ever to give it, and one which does unsurpassedly good work in every respect, then the

Cutaway (CLARK)

Double Action Engine Harrow

is the one for you to buy. Ask the CUTAWAY dealer in your town to show you a CUTAWAY (CLARK) harrow. If we have no dealer there, write direct to us for catalog. Don't accept a substitute.

THE CUTAWAY HARROW COMPANY, 996 Main St., HIGGANUM, CONNECTICUT
Maker of the original CLARK *Disk harrows and plows*



The Climax of 21 Years of Motor Car Building Experience Is the Appersons' Master Creation — the New "45"

"The Wizard of the Hills"

WITH their own hands, 21 years ago, Elmer and Edgar Apperson built America's first automobile. They have been building them ever since, and in all that time no Apperson car has ever worn out. Annual upkeep, our parts-purchase record shows, is but $5 per car. Consider that some of these are 20 year old cars. The Apperson Brothers have never created a failure. They have never built a car that developed chronic trouble. They are the only makers who hold such a record. Their company, organized 21 years ago, is the oldest in the automobile industry. In 1903 they achieved chassis perfection. Judge the wonderful car that must come from that wealth of experience. For it is greater than that of any other maker.

And now the Apperson Brothers announce their masterpiece—the greatest of all Appersons—the new "45." In it is crystallized the vast knowledge these pioneers secured in twenty-one years. It is equipped with every comfort and convenience the motorist desires in an advanced automobile.

Ten years ago we reached that point in automobile construction, toward which other manufacturers have ever since been striving—BIG POWER—LIGHT WEIGHT—LOW-UP-KEEP COST.

PRICES AND MODELS, F. O. B Kokomo, Indiana

All with Electric Lights, Electric Starter and Full Equipment

Light 4-45	Touring for 5	$1600	4-45	Touring for 5	$1785
	Roadster for 2	1600		Sedan Limousine	2500
	Inside drive coupe or town car for 4	2350	6-45-58	Touring for 5	2200
				Touring for 7	2300
				Roadster for 2	2200

Get in touch with our nearest distributors and view for yourself this latest creation of Elmer Apperson. Or write us direct for art catalog and full specifications.

Apperson Bros. Automobile Co., 305 Main St., Kokomo, Ind.

APPERSON DISTRIBUTORS IN CALIFORNIA:
Los Angeles.....The Leon T. Shettler Co.
San Francisco.....Myers Motor Car Co.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

THE FARMERS' MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

"Petaluma Thoroughbred Baby Chicks"—Give us your orders and we'll give you the best chicks to be had in Petaluma, at lowest market prices. (White Leghorns our specialty.) We give satisfactory guarantee. References: Petaluma National Bank, Petaluma Savings Bank, Postmaster of Petaluma. Write immediately to **McFadden & Starke, P. O. Box 26, Dept. B, Petaluma, Cal.**

Bourbon Red Turkeys exclusively; early maturing, very domestic, splendid layers; my stock winners of five ribbons at Los Angeles 1914. All birds but one directly from best Eastern breeders. Eggs from two unrelated pens, $3.00 and $5.00. Fertility guaranteed. Some stock. **Mrs. W. S. Ferris, R. 2, Pomona, Cal.**

S. C. White Leghorns—Baby chicks for sale; baby chicks, day old, $10 per hundred, and $90 per thousand. Eggs for hatching, $4.50 per hundred. Cockerels and pullets, prices on application. **The Model Poultry Farm, Box L, Irvington, Cal. A. de Campos, Prop.**

For Sale—Thoroughbred Bourbon red turkey toms 7 months of age, weighing 25 lbs. and over; fine, healthy birds; nothing better in California; also a few white Hollands hens, 6 to 8 months old, and two toms. **Wm. S. Zeller, P. O., Escalon, Cal.**

Save This Ad—Eggs of wild Mallard ducks, 13 for $2.50; 26, $4.50. Quickly and easily grown; become very tame, great fly, bug and dandelion destroyers. Also splendid decoys. Orders filled in turn, so don't delay. **Walt W. Sloanm, Massena, Iowa.**

Campines, Silver and Golden—Improved American type only; eggs for hatching; Silvers from $2.50 to $5 per setting, according to quality; Goldens, $5 per setting. **Arthur King, Box 30, Route 1, San Luis Obispo.** Member American and Pacific Coast Campine Clubs.

White Indian Runner Duck Eggs from pen headed by drake exhibited Los Angeles; year-old ducks bred from same drake cheap; Buff Orpington duck eggs from best ducks in county. Book orders now. **James Lowe, Encanto, Cal.**

FREE—66-page catalogue, describes in detail prices, etc., on 19 kinds of baby chicks, hatching eggs, incubators, brooders, etc. We ship everywhere. **The Pioneer Hatchery Co., 112 E. 8th st., Los Angeles, Cal.**

Sicilian Buttercups—Wonderful layers of large, white eggs. Most beautiful fowls; non-setters. A fine lot of high class trios for sale. Prices and description on request. **Hugh H. Harper, Garden Home, Oregon.**

Muscovy Ducks. Heaviest, best paying ducks for market. Cheap feeders. Hatching eggs, ducklings and young selected breeding birds for sale. **Lebeck, Petaluma, R. 1, Sonoma Co., Cal.**

White Leghorn Baby Chicks from stock selected by Hogan's system for laying qualities and of great vitality, $9 per 100. **Arthur King, Box 30, Route 1, San Luis Obispo, Cal.** See my Campine advertisement.

Brown Leghorns—A fine lot of breeding and exhibition cockerals, stock from the best Eastern breeders; also good Buff Orpington hens and grown pullets; eggs for hatching. **Fredeasborg Ranch, Suisun, Cal.**

Baby Chicks and Hatching Eggs—S. C. White Leghorns, Rhode Island Reds, heavy laying strains, 100 or 1,000, finest poultry plant in California. **Pebbleside Poultry Farm, Sunnyvale, Cal.**

"Pigeons," Runts, Carneaux, Homers, Maltese, Tumblers, White Kings; thousands to select from; largest plant in West. **C. R. King, E and Spring st., Hayward, Cal.**

Baby Chicks. Write for book, "The Day Old Chick Business." Its free. White Leghorn and Black Minorca chicks my specialty. **Lasher's Hatchery, 420 Kentucky st., Petaluma, Cal.**

Hatching Eggs That Hatch—From Hoganized S. C. White Leghorns, $6 per 100; $50 per 1,000. Book early. **R. H. Dickinson, Pine Tree Poultry Farm, Los Gatos, Cal. Phone 292 J.3.**

White Rocks, Mottled Anconas, trapnested stock, will stand test in show and nest. Catalogue free. **Ideal Poultry Yards, C. Daniels & Sons, Hoquiam, Wash.**

Feed Croley's Infant Chick Feed. Raises more healthy chicks than all the other feeds combined. Manufactured by the **Geo. H. Croley Co., Inc., 631-637 Brannan St., San Francisco.**

POULTRY—Continued.

Electrically Hatched Chicks are uniformly strong and vigorous. All standard breeds furnished. Write for price list. **Electric Hatchery, Hayward, Cal.**

Barred Plymouth Rocks—"The kind that win and lay." Eggs for hatching and stock for sale. **Chas. H. Vodden, Box 693, Los Gatos, Cal.**

Bronze Turkeys and Eggs—Large size; good plumage; early maturity. Eggs $5 per setting; $35 per 100. (Circulars.) **Ed. Hart, Clements, Cal.**

Trap-Nested S. C. White Leghorns—Cockerels, breeders, eggs and chicks. **Arthur R. Schroeder, Box 22, San Gregorio, Cal.**

Baby Chicks (White Leghorns) shipped on approval before remitting. No weak ones charged for. **Schellville Hatchery, Route 1, Sonoma, Cal.**

Ancona Eggs for hatching; world beaters for laying; none better at any price; $1.50 for 15. **Mrs. C. M. Howard, Otay, Cal.**

Petaluma Brooder Stove. Modern way of brooding. Free catalogue. **Petaluma Brooder Stove Company, Hayward, Cal.**

Eggs for early hatching from carefully mated pens. Prices reasonable. **The Buff Orpingtons You Want. Ernest L. Wilder, Los Gatos, Cal.**

Indian Runner Ducks, $5; one drake, $10; eggs from Oakland prize winners, $1 setting. **Mrs. Nutman, Mayfield, Cal.**

Buff Orpington Eggs—$3, $1.50 setting, Runner Duck Eggs, $1. **"Glendale," Fleming Ave., San Jose, Cal.**

R. I. Red Eggs and Chix from great laying strain of **Inwood Poultry Farm, box 192, Folsom, Cal.**

For Sale—Bourbon Red Turkeys, hardiest breed. **C. P. Guthrie, San Jacinto, Cal.**

LIVESTOCK

Ohio Improved Chester (O. I. C.) Swine for immediate delivery; young service boars 10 and 12 months old; fall pigs, both sexes, from big, aged sows and by extra heavy-honed boars; few breed sows. All stock strictly first-class in every respect. All stock crated and registered free. **C. B. Cunningham, Mills, Sacramento county, California.**

Grape Wild Farm Thoroughbreds—Guernsey Bulls of Advanced Register Breeding. Berkshire Hogs. Largest herd. Best Eastern strains. All ages for sale. **A. B. Humphrey, Prop., Mayhews, Sacramento Co., Cal.**

For Sale or Trade—Registered Missouri jack, 5 years, 15.3 hands, sound, big and heavy boned; good colts to show. Want work stock, horses or mules. Address, **Linden Stock Farm, Linden, Cal.**

Grape Wild Farm Thoroughbreds—Guernsey bulls of A. R. Breeding. Berkshire Hogs. Finest herd in the State. All ages for sale. **A. B. Humphrey, proprietor. Mayhews, Sacramento, Co., Cal.**

Hogs—Registered Duroc's Pigs; bred gilts and boars of good Eastern and western strains. For particulars address **Lindquist Brothers, Turlock, Cal.**

Calves Raised Without Milk—Cost less than half as much as the milk-raised calves. Write for free book to **Coulson Co., Box O, Petaluma.**

Poland Chinas—I still have a few registered Gilts and one bred sow for sale; satisfaction or money back. **N. M. Lester, R. F. D. No. 1, Gridley, Cal.**

J. W. Benolt, Route 2, Modesto, Cal.—Registered Holstein bulls from large producing dams. Write for particulars.

Forest Hill Stock Farm—Duroc Jersey swine; choice young pigs and breeding stock. **John Schrueder, Gates, Ore.**

350 Big-type Mulefoot Hogs of all ages for sale. Catalogue free. **John Dunlap, Williamsport, Ohio.**

Registered Duroc Hogs, $10, at weaning time. Out of champion ancestors. **Ed. E. Johnson, Turlock, Cal.**

Registered Berkshires, $10, at weaning time. **M. D. Good, Mt. Vernon, Wash.**

Glenview Poland China stock for sale—**Chas. R. Hanna, R. D. 3, Riverside, Cal.**

Mulefoot hogs are best for Pacific Coast. For information write **John Dunlap, Williamsport, Ohio.**

For Sale—Hornless Toggenburg Buck; will exchange for doe of equal value. **George Langlois, Sebastopol, Cal.**

If You Want Eggs, get Andalusians. **Daniel Calbreath, Monmouth, Oregon.**

REAL ESTATE

Rare Opportunity—I own too much land and must sell some of it to get money enough to plant the balance to orchard. For this reason I offer 120 acres as a whole or in 20-acre tracts at wholesale prices, or would lease same to responsible party. This 120-acre tract is situated in Yolo county, Sacramento Valley, California. It adjoins the city limits of a thrifty, healthy and prosperous town having all modern conveniences, including steam and electric railroads and good wagon roads. It is 2½ hours from San Francisco and one hour from Sacramento, between two of the best markets in California; 50 acres is under ditch and water could be had in any part of it at 50 feet. Will grow anything. Price from $75 to $100 per acre. **Address box 200, Orchard and Farm, Hearst Bldg., San Francisco.**

Victoria, Australia, wants settlers—Special inducements offered by State Government, which owns lands, water, railways and free schools; excellent climate; resembles California; no extreme heat or cold; small deposit and 31½ years for purchase of lands; adapted to every kind of culture; citrus fruits, apples and pears; wheat, corn, alfalfa, sugar beets; dairying, hog raising, etc.; ample markets; exceptional opportunities in irrigated districts; reduced passages for approved settlers; free particulars from **F. T. A. Fricke, Box T, 687 Market St., San Francisco.**

For Sale—Well improved 800-acre grain and stock farm, including about 125 head cattle, 40 horses, 250 hogs, 5,000 bushels grain, all farm implements; located 25 miles south of Calgary, 5½ miles from Okotoks, in the best part of Alberta, Canada. Price $42,000, about one-half cash, balance time to suit purchaser. For further information address owner, **John P. Todd, box 31 Okotoks, Alberta, Canada.**

For Sale—80 acres of the best alfalfa land in the State; ditch water from Kings river, artesian wells with gas for fuel and light on land adjoining; ten miles south of Hanford, Kings county, California. Price $100 per acre. **Owner, L. Rowantree, 1300½ So. Main St., Los Angeles, Cal.**

Thirty-Acre Home for Sale—Modern seven-room house; barn 66x96; family orchard; $27 almonds sold from three trees; oranges, lemons, grape fruit, peach orchard. Thompson's grapes and alfalfa; $12,000; terms; would divide. **N. M. Lester, R. F. D. No. 1, Gridley, Cal.**

For Exchange—An eight-room house, electric lighted, centrally located on street car line. Lot 50x135 with house for $6,500; $2,200 mortgage. Would prefer to trade for equity. Write **Omer N. Kruschke, 2114 Center st., Berkeley, Cal. Phone Berkeley 532.**

OREGON—I have some real good bargains in stock, grain, dairy, fruit and poultry ranches; also lots, acreage and town property. Write for list. **Henry Ambler, the Old Reliable Real Estate Agent, Philomath, Benton County, Oregon.**

We locate you on Government land in Arizona, San Pedro Valley; $1 per acre location fee. Also handle large tracts deeded land and scrip. **L. Rowantree, 1300½ So. Main St., Los Angeles, Cal.**

For Sale—Two acres rich, sandy loam; half mile from Petaluma; greatest business city West. **Mrs. A. Zeh, Gossage Road, Box 32, Petaluma, Cal.**

Wanted to hear from owner who has good farm for sale. Send description and price. **Northwestern Business Agency, Minneapolis, Minn.**

For Sale—Villa sites on the Blue Lakes. Address **G. A. Behrnd, Midlake P. O., Cal.**

REAL ESTATE WANTED

Farms Wanted—We have direct buyers; don't pay commissions; write, describing property, naming lowest price. We help buyers locate desirable property free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted—Farm lands. For quick results state price and description in first letter. **Western Sales Agency, Phoenix Bldg., Minneapolis, Minn.**

MACHINERY AND SUPPLIES

For Sale — Farming Machinery — One new Case 60 h.-p. steam engine and new separator, 32-inch cylinder, with blower and recleaner; also two new sections of John Deere steam plow. **Box 288, Santa Ana, Cal.**

BEES AND HONEY

For Sale—Italian bees. For prices address **Mr. Talnter, Corte Madera, Cal.**

SEEDS, PLANTS, ETC.

We can now offer the following: Crimson W. Rhubarb, $20 per M; Conover Asparagus, $3 per M; Loganberry Tips, $18 per M; M. Blackberry Tips, $13 per M; Himalaya Tips, $13 per M; Cuthbert Raspberry Plants, $10 per M. **Currier Bulb Co., Seubright, Cal.**

For Sale—Alfalfa seed, crop of 1913, free from noxious seeds. Price 12½c per lb., f. o. b. Zamora, Yolo county, Cal. Samples on application. We grow this seed. Address **V. A. Peterson, Black's Station, Cal.**

The 1,200-Acre Nursery—Growers of 1,500 varieties of trees and plants. **Oregon Nursery Co., Orenco, Oregon. Sales office, 523 Chamber of Commerce, Los Angeles, Cal.**

Spineless Cactus—Burbank's improved varieties of forage and fruiting cactus. Orders taken for spring 1914 delivery. Send for catalogue and price list. **Jesse I. Jewell, Santa Rosa, Cal.**

St. Regis Everbearing Red Raspberry Plants—Most famous berry grown; also improved strawberry plants. Send for catalogue. **Old Hickory Supply Co., Dept. 5, San Francisco.**

Early Tomatoes—If you have failed on account of dropping of the early blossoms, try the **"Quarantino."** Packet 10c, ounce, 50c. Plant now. **J. S. Philippi, Norwalk, Cal.**

Spineless Cactus, berry, small fruit and vegetable introduction. Circular free. **Caldwell Bros., Box 613, Los Angeles, Cal.**

Berry Plants — Everything in small fruits for garden and orchard. Send to-day for price list. **Louis F. Scribner, Pasadena, Cal. R. F. D.**

Two million strawberry plants, Loganberries, blacks, gooseberries, etc. **H. A. Hyde, Watsonville Nurseryman.**

Wanted—28,000 leaves of Burbank standard cactus in leading varieties. Address **P. O. Box 265, Santa Rosa, Cal.**

Artichokes, White French; immense yield; greatest hog feed; $2 per 100. **Sladeland Farms, Amity, Oregon.**

Sour Orange Seed and Seedlings, 30,000 Eureka Lemons, 50c. Otis E. Hyde, 63 North Meredith ave., Pasadena, Cal.

Clean Vetch Seed, $2.75 per hundred. **Murphy's Seed Store, Albany, Ore.**

MISCELLANEOUS—FOR SALE

Symon Brothers, Wreckers—We enter the portals of 1914 with renewed energy for larger facilities, bigger bargains and more business. 1913 was the largest year we ever had, but we positively will make 1914 greater. When you consider our stock to select from, our own men and teams for hauling, our guarantee of general satisfaction, you take no chances. We specialize in mixed car lots. Complete outfit for your entire building. Select your own material, if in town, or leave to us, treatment to all alike—your recommendation means money to us. Our January 1st inventory shows 1,500,000 feet of sound dimension second-hand lumber, and 950,000 feet of new Stock pine and redwood; 1,000,000 RW shingles, Star A, and 900,000 cedars; 2,500 second-hand doors, 25c to $5.00; 1,600 news doors, $1.40 to fronts at $15.50; 8,700 sash, 900 windows, 150 rolls of chicken netting, 500 kegs of nails, 200 tons of Ready Roofing and roofing felt, 40 new roll rim tubs, 500 second-hand and new toilets, 150 basins, 5,000 feet of pipe, 8 tons fittings, 400 fixtures, electrical material, inside fittings, laundry trays, boilers, etc. Two yards of miscellaneous material, too much to list—anything for the building we have. The above stock is first class. Call and verify or send list for estimate. Prices the lowest for legitimate material. Buy all at one place. We need room; more material coming. **11th and Markets Sts. and 1679 Market St., S. F. (Dept. 3).**

Second-Hand Pipe—Largest dealers in standard pipe and screw casings; prices right; guaranteed first-class. **Pacific Pipe Co., Main and Howard sts.**

RABBITS

Thoroughbred Belgian, Angora, New Zealand and Flemish Rabbits—1913 winners of 16 firsts, specials and cash prizes. Catalogue free. **Caldwell Bros., Los Angeles, Cal., San Fernando Boulevard.**

AGENTS WANTED

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

THE FARMER'S MARKET PLACE

TREES

Tree Bargains—French, Imperial, Fellenberg, sugar and Hungarian prunes; Bartletts, apples, peaches, cherries, almonds and figs, grafted Franquettes on Calif. Black. Buds and scions carefully selected from bearing trees of the best strain. Stock hardy and clean. Prices very reasonable. Specially low prices for large orders. Write or wire your orders promptly as stock is moving rapidly. **Table Grove Nurseries, Healdsburg, Calif.**

Sixty-Day Prices on orchard trees, four to six feet: Apple, $5.00 for 100; Pear, $14 for 100. Write now. Guaranteed stock. **Southern Oregon Nursery, Yoncalla, Oregon.**

300,000 sour and sweet seed bed stock, 50,000 budded navels, Valencia and Eureka lemon trees, raised 2 to 5 in. apart in seed bed, therefore the largest and best trees. **J. P. Butler, Jr., Pasadena, R. F. D. Box 80.**

Walnut Trees—Late Blight-Resisting varieties, grafted and budded on California black and on hybrid roots—Eureka, Franquette, Mayette, Neff's prolific, Concord and Placentia. **Dr. W. W. Fitzgerald, Elks' Bldg., Stockton, Cal.**

Orange Trees—First-class navels and Valencias, one-half inch and over in diameter, 50c each or $4.75 per thousand. **A. G. Wright, Fullerton, Cal.**

Robinson Citrus Nurseries, San Dimas, Cal., growers of standard orange and lemon trees. **Burbank and Mediterranean Spineless Cactus Plantations.**

Citrus Nurseries, Murphy Oil Company, East Whittier, California. Selected stock for sale; inspection invited.

Good Line Nursery Stock—Prunings, all kinds, 10 per cent under market. **Farmers' Nursery, Schastopol, Cal.**

FOR THE GARDEN

FLOWER GARDEN, 10c—Regular price $1. Send cash or stamps for handsome variety of flower seeds; new stock. Postage prepaid. **M. & A. Seed Co., Box 386, San Francisco, Cal.**

EDUCATIONAL

Learn Acting—Thousands are making good through our new method mail instruction. Why not you? **Thompson School of Dramatic Art, Box 952-H, Bridgeport, Connecticut.**

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

FROGS

Frogs—Investigate breeding big Eastern bullfrogs; unusual possibilities west of mountains. Tremendous demand. **Aqualifeco, Seymour, Conn.**

NOVELTIES

Swiss Warbler's Bird Call — Imitates any bird or animal perfectly; hunter's friend; boy's delight. 10c postpaid. **Hilliard, 652 Dora, Ala.**

SITUATIONS WANTED

Fruit Export to Denmark—Well introduced, energetic agent, with best references and residing in Copenhagen, wants the representation for first-class fruit growers exporting dried and canned fruits. Offers to "6505" **Sylvester Hvids Bureau, Copenhagen, Denmark.**

DOGS

Thoroughbred Scotch Collie Male Pups, 10 weeks old, $5 each. **C. Keaton, R. 5, San Jose, Cal.**

PATENT ATTORNEYS

Dewey, Strong & Co. (Est. 1866)—Patents, trademarks, inventors' guide, 100 mech. movements free. **911-916 Crocker bldg., San Francisco.**

PHEASANTS

Ring-Necked China Pheasants for Sale—Also eggs in season. Address **T. D. Morris, Agua Caliente, Sonoma Co., Cal.**

Booklet, "How I Raise Pheasants," 20c. Prices free. **H. W. Myers, Tacoma, Wash.**

AGRICULTURAL LIME

Lime Is Nature's Crop Producer. We manufacture the highest grade agricultural lime—both hydrated and ground carbonate. Get our free booklet and prices. **Pacific Lime and Plaster Company, 807 Monadnock Bldg., San Francisco, Cal.**

BUSINESS CHANCES

Free for Six Months—My special offer to introduce my magazine "Investing for Profit." It is worth $10 a copy to anyone who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how anyone, no matter how poor, CAN acquire riches. INVESTING FOR PROFIT is the only progressive financial journal published. It shows how $100 grows to $2,200. Write NOW and I'll send it six months free. **H. L. Barber, 499-20W Jackson Blvd., Chicago.**

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

Partner—Young man wants to invest $1,000 and services. **J. Vandenberg, 27 Monroe street, San Francisco.**

BUSINESS PERSONALS

Patent, architectural, mechanical illustration drawing; blueprinting, tracing, mapping, perspectives. Write the **San Jose Drafting Co., 108 Ryland Bldg., San Jose, Cal.**

MUSIC

New Music. Rebecca of Sunnybrook Farm, I Want to Go Back to Dixieland, Lets Dance, Tango Argentino, Valse Maurice (Hesitation), Spirit of Independence, Sunshine and Roses, 15c, 7 for $1.00, with catalogue of all new hits. Classical, teaching and easy graded music, 5c and 10c each. 1c extra by mail. Old Home songs, 120 of the best, 35c. College songs, 120 comic and rollocking, 35c. Grand Opera songs, 26 of the best, 45c. Selection of Grand Operas, great value, 45c. 7c extra by mail. Orders promptly filled. **Remick Song Shop, 906 Market St., San Francisco, Cal.**

HELP WANTED

Local Representative Wanted—No canvassing or soliciting required; good income assured. Address **National Co-Operative Realty Co., V-1605, Marden Building, Washington, D. C.**

Story-Writers Wanted — Make money writing short stories. Big pay; pleasant work for you. Send for free booklet; tells how. **United Press Syndicate, San Francisco.**

BELGIAN HARES.

Thoroughbred Belgians, with or without pedigrees. **Old Hickory Supply Co., Dept. 5, San Francisco.**

Honesty

Teacher—Henry, can you define a hypocrite?

Henry—Yessum. It's a kid wot comes to school wid a smile on his face.

PAINT WITHOUT OIL

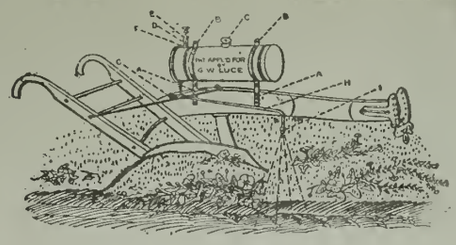
Remarkable Discovery That Cuts Down the Cost of Paint Seventy-five Per Cent.

A Free Trial Package Is Mailed to Everyone Who Writes.

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powderpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire-proof and as durable as oil paint. It adheres to any surface, wood, stone or brick; spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manuf'r., 412 North St., Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write to-day.

FREE Wholesale Catalogue of everything for farm and home. Engines, Pumps, Fence, Wagons, Harness, Furniture, Groceries, etc. The Old Hickory Supply Co., Inc. Dept. 5, 85 Second St., San Francisco.



USE

"Nonpareil"

and the

PRESTO PLOW TANK

For Exterminating Morning Glory, Johnson Grass, Bermuda Grass and all Weeds, Insects and Germs that dwell in the ground.

One large grower purchased last year $2,000.00 worth of "Nonpareil." Having experimented for the past four years, he knows what he is talking about. Is absolutely a success.

Very low prices in tank cars and iron drums. Presto Tank and Outfit —$8.50. f. o. b. San Francisco. An additional air tank, $1.25.

Now is the right season to do the work. Farmers have tried useless methods for years. Nonpariel with Presto Plow Tank does the work.

Use Carbon Bisulphide to Exterminate

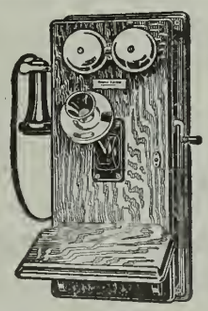
Ground Squirrels, Gophers, Prairie Dogs; also Borers, Ants, Root Aphis, Etc. Leaves no injurious after effects if inhaled while handling.

For sale by all dealers, and the manufacturers. Send for Booklet O-F. Full particulars and prices.

WHEELER, REYNOLDS & STAUFFER

624 California Street **San Francisco, Cal.**

Burpee, Philadelphia, is sufficient for the front of a post card. If you will write your own address plainly on the other side we shall be pleased to send THE LEADING AMERICAN SEED CATALOG—a bright, new book of 182 pages, which should be read by all who would have the best garden possible and who are willing to pay a fair price for **Seeds of the Burpee-Quality**



The Right Kind of Telephone Service

You must have good apparatus to have good service. Farmers have learned that in buying equipment for their neighborhood telephone companies it does not pay to put price before quality. A cheap instrument that works only in good weather is likely to fail in an emergency when you need it most.

It's always safe to buy, or to specify,

Western · Electric

Rural Telephones

They are made to the standard of all "Bell" telephone equipment, and made by the same manufacturers who make all of the instruments used by the Bell Telephone Company.

Before you buy any telephone equipment or replace any instrument that may be now in use, write to our nearest house, as listed below, for our new illustrated book on rural telephones. Ask for book No. 95.

WESTERN ELECTRIC COMPANY

Manufacturers of the 7,500,000 "Bell" Telephones

New York, Buffalo, Philadelphia, Boston, New Orleans, Atlanta, Savannah, Richmond, Cincinnati, Chicago, Milwaukee, Pittsburgh, Cleveland, St. Louis, Indianapolis, Minneapolis, St. Paul, Kansas City, Oklahoma City, Dallas, Houston, Denver, Omaha, Salt Lake City, Los Angeles, San Francisco, Oakland, Seattle, Portland

EQUIPMENT FOR EVERY ELECTRICAL NEED

HIGH GRADE HOUSE PAINTS
$1.45 Gallon
Freight prepaid to your railroad station on any order of $5 or over.
Write for special Color Card.
Write for samples and special price on wall paper. New 1914 designs.
Pacific Paint and Wall Paper Co.
2005 San Pablo Ave., Oakland, Cal.

THE HOME INDUSTRY LEAGUE
of California is not advocating a boycott on Eastern manufactured goods. They are calling attention of our own people to their indifference in calling for and demanding of their dealers goods made in California, so that the greater part of the $545,000,000 annually sent away would remain in business channels in our own State.
It is but justice to the manufacturing interest of California that our people should realize that they are morally bound to give the manufacturers preference in purchasing supplies.
Besides QUEEN LILY SOAP, we manufacture what a great many people tell us is the best FIVE-CENT soap that they ever used. We call the soap "CLOVER LEAF AMMONIA BORAX SOAP." Try a sample; if you do not like it, return it to your grocer and get your money back.
The popular washing powder on the market to-day is KLEENO, the one washing powder that leaves the LADIES' hands soft and white and not a scarlet color.
Queen Lily Soap, Clover Leaf Ammonia Borax Soap and Kleeno Washing Powder are three articles endorsed by the HOME INDUSTRY LEAGUE.
We solicit your patronage, and if you find the above-mentioned articles are not satisfactory to you, then try the soaps made by some other California manufacturer.
Yours sincerely,
FISHBECK SOAP COMPANY.

EVERYTHING
FOR THE
BUILDER
Bargains in Building Material
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.
Carload Lots a Specialty
H. McKEVITT & SON
1849 Mission St.
Near 14th St. San Francisco

REDWOOD TANKS

I sell to the consumer. Box shook and Boxes, Trays, Lumber, Millwork, Doors, Windows, Moulding, Wagon Tanks, Spraying Tanks. Independent.
R. F. WILSON, Stockton, California

Use KEROSENE Engine Free!

Amazing "DETROIT" Kerosene Engine shipped on 15 days' FREE Trial, proves kerosene cheapest, safest, most powerful fuel. If satisfied, pay lowest price ever given on reliable farm engine; if not, pay nothing. No waste, no evaporation, no explosion from coal oil.
Gasoline Going Up!
Gasoline is 9c to 15c higher than coal oil. Still going up. Two pints of coal oil do work of three pints gasoline.
Amazing "DETROIT"
—only engine running on coal oil successfully, uses alcohol, gasoline and benzine, too. Starts without cranking. Only three moving parts—no cams—no sprockets—no gears—no valves—the utmost in simplicity, power and strength. Mounted on skids. All sizes, 2 to 20 h. p., in stock ready to ship. Engine tested before crating. Comes all ready to run. Cylinders cannot carbonize
Pumps, saws, threshes, churns, separates milk, grinds feed, shells corn, runs home electric lighting plant. Prices (stripped), $29.50 up. Sent any place on fifteen days' Free Trial. Don't buy an engine until you investigate the money-saving, power-saving "DETROIT." Thousands in use. Costs only postal to find out. If you are first in your neighborhood to write, you get Special Extra-Low Introductory price. Write! (184)
Detroit Engine Works, 515 Bellevue Ave., Detroit, Mich.

Quiet Milking

—By H. E. Dvorachek—

LIKE many dairy subjects, the question of quietness in the milking barn during milking hours has its opposing supporters. On the one side you hear the argument that during milking time the cow should be entertained with soothing song and music. Some go so far as to install victrolas in their milking barns. On the other side you hear that the barn at that time should be a place of absolute peace and quiet. Let no sound be heard to draw the cow's attention from that mysterious process of milk manufacture save the quiet rumination of the herd and the sound of the regular streams of milk as they fill the milk pail.

Personally I am not in favor of converting the milking barn into a conservatory of music, especially if the programme is to be furnished by milkers who become so absorbed in their yodeling and humming that with them milking becomes a secondary consideration, and the cow soon loses patience and will not give down her milk readily. Neither do I believe the investment in musical instruments necessary. On the other hand, if I should enter a barn at milking time where deathly silence prevails, although a number of milkers are at work, I should be inclined to believe that something was wrong and I would not be at all surprised to see a milker suddenly rise with the uplifted milkstool, for it has been my experience with milkers that those who sulked about the barn with never a word to say were generally out of sympathy with their work and therefore the first to use the milkstool. I maintain that you cannot and should not keep a cheerful and contented milker absolutely quiet.

But where are you going to draw the line, if noise aggravates and silence is monotonous and breeds discontent? Let each cow have her name. Then put the man at some work other than milking, who does not take kindly enough to his job or to his string of cows to call each one by name, to bestow occasional (friendly) pat, and to ask her to step over and put her foot back. Let the milking hours be a pleasant event for both the cow and milker. When the two get to a point where they have formed a mutual friendship you have reached the ideal condition. I doubt whether or not the milker can reach that point either by noisy singing or by noiselessly sulking about his work.

Porkers for Pleasure

Out of the profits realized from three pigs, purchased a year ago for $30 each, J. K. Smawley, a farmer living eighty miles south of Spokane, has started on a trip around the United States.

Smawley has $525 for the trip, and in addition has the three pigs with which he started his herd. At the Lewiston (Idaho) live stock show a little more than a year ago he purchased the original trio of Berkshire hogs for $30 each. With a delegation of their offspring he returned to the livestock show this year and his young pigs won six blue ribbons. There was a lively demand for Shawley's young porkers, and he sold fifteen for $35 each, a total of $525.

Sheep are profitable and are good foragers, but remember they cannot live on nothing any more than horses and hogs. Give them a fairly good chance and they will generally bring in a good yearly profit, or larger returns during the year than any other animal for its size.

A flock of sheep should be visited daily. Tag all that become foul and separate from the flock any that have foot trouble or are sick.

GUARANTEED·COFFEE
Guaranteed to the buyer because it is a selection of the finest grown varieties. Notable for well-balanced character, smooth taste and rich flavor. Perfect coffee because specially imported and freshly roasted the day it is sent to you. Low in price because we are importers selling direct to you. CASWELL'S NATIONAL CREST COFFEE is in 5-lb cans, sent you by Parcel Post, prepaid, for $2.00. A trial will show you. Address with order
GEO. W. CASWELL CO.
Coffee Importers,
530 FOLSOM STREET, SAN FRANCISCO
Also Dealers in Spices, Teas, Extracts and Olive Oils.
Agents Wanted.

Sale of Army and Navy Goods
DIRECT FROM U. S. WAR DEPT.
Blankets from $2.00 to $5.00; Navy Blue Shirts, $1.75; Olive Drab Army Shirts, $2.50; Khaki Army Shirts, $1.00; Army Wool Socks, 25c pair; U. S. Knapsacks, 75c; U. S. Canteens, 40c; U. S. Rifles, $2.50; Mess Kits, 35c; Shelter Tents, $1.25. Other U. S. Army Goods to interest and please everybody.
Send for Free Catalogue. Mail Orders Promptly Filled.
SPIRO HARNESS CO., 307 Market St., San Francisco, Cal.

THE FERTILIZER
HAWFERCO
THAT DOUBLES THE DOLLARS
Success vs. Opinion
Success is largely a matter of opinion. Method of procedure, in any occupation, is responsible for results. And method of procedure is influenced by opinion. The idea is to get the right opinion.
We sell fertilizers—more than any other firm on the Pacific Coast. We first got the opinion of several expert chemists in this line as to formulae. We experimented with these formulae by actual tests and analysis, and from the result formed an opinion as to what was the right idea in crop producing fertilizers.
Thousands of orchardists, vineyardists and ranchers throughout the country have proved their faith in our opinion by ordering our products. Their large crops and growing bank accounts prove that our opinion is right.
We'd like to send you a trial order of Hawferco Fertilizers. There's one for every purpose. What kind do you need?
Hawaiian Fertilizer Co.
250 California Street San Francisco
Send for booklet on Orange and Lemon Fertilizers

EXTRA CHOICE IRIS
Cypriana, Cyp. Superba, Cyp. Magnifica, Cyp. Celestial, 35c each, 3 for $1.
The above are large bearded irises, with tall branching flowering stems, in combinations of blue, lilac blue, violet, etc. We cannot recommend these too highly, as they are splendidly adapted to our mild climate; late bloomers and very distinct from other bearded irises.
A good assortment of "German" Iris, 12 distinct varieties, $1 postpaid.
THE DEAN IRIS GARDENS, MONETA, CAL.

Labor-Saving Devices for the Kitchen

By Mary B. Vail, Head of Department of Home Economics in Mills College

This, the fifth of a series of articles on "Practical Home Economics" written for "Orchard and Farm" by Miss Mary B. Vail, who is so successfully teaching the girls at Mills College to be efficient homemakers, deals with ways of "letting the head save the heels" by using labor-saving devices in the kitchen.

Are you interested in plans of this kind? Are there questions you would like to have answered about arranging your kitchen so that your work may be more easily performed? Any question addressed to Virginia Kirtley, in care of "Orchard and Farm," will be taken up with Miss Vail and answered through the columns of "Orchard and Farm." Make this department of real service to you in your home work. Do not hesitate to ask questions. The next article of this series will deal with real problems of home making and will be of much help in the spring housework.

ALMOST every woman has her economical streak and her pet extravagance. They indicate her training and her ability, but they are very apt to warp her sense of values.

Money values are so apparent, or so insistent, that they cannot be ignored; moreover, they are likely to persuade us that time has little value and energy less. If our time were paid for by the hour, we should not be so wasteful of it. If human energy were easily measured we should not squander it. We women believe ourselves to be unselfish when we give without stint of time and energy that which, apparently, costs us nothing. We often make large overdrafts and persuade ourselves that our supply is inexhaustible. Occasionally Dame Nature refuses to honor the overdraft, and we are obliged to rest and recuperate. We then discover that our vaunted unselfishness is only short-sighted, mistaken selfishness. Why not face the problems of life with all the light available and learn to conserve our energy, limit our time, and save our money? Why not balance values and apply business methods to housekeeping processes? Why not follow the old saw, "let your head save your heels," which means shorten processes, cut down the time devoted to them, or find apparatus to work for us. Life will be merely existence if we multiply processes. It will be well worth living if we minimize the machinery of life.

The one thing that takes most time and comes nearest making drudgery of housework is dish-washing. To make it less monotonous we must reduce the number of dishes or simplify the process; perhaps both. In our food workshop we must have a light, convenient sink with drain boards and plenty of hot water. Then we must plan to eliminate every unnecessary movement, that neither time nor energy may be wasted. The problem of dish-washing in hotels and restaurants has been solved by having machinery that raises and lowers the baskets of dishes and carries them from a tank of hot soapy water to one of clear hot water, and from there to a table to drain and dry. No towels are used except for glasses and, perhaps, silver and large serving dishes. The dishes are cleaner than when hand dried; the time consumed less, to say nothing of the saving in towels and their care. There are small machines adapted to the use of families in which the water is sprayed over the dishes. Even though we cannot buy a machine we can apply the principles of it to our problem. System is necessary in scraping, piling, and arranging the soiled dishes. If very hot water is used a mop may be necessary to wash with, a basket to lift with, and a rack to dry the dishes on. Before soap is put into the water the glasses must be washed and immediately wiped and polished, and to accomplish this the towels must of course be clean. The dishes are usually taken in the order of their cleanliness and size. Silver needs the hottest of water, both soapy and clear; in fact, silver should be left in boiling rinsing water for several minutes to be clean; nothing goes to the mouth as often as the fork and nothing is so apt to be carelessly washed. Silver is ordinarily wiped, but if it stands on end in a rack or pail it will dry quickly without wiping. A rack is quite necessary to hold the plates, etc., on edge and apart, while they are rinsed in very hot water and left to dry without handling. It is true that a rack takes room on table or shelf, or in sink, cupboard or laundry tub, and it must be covered lightly with a clean towel to protect the dishes from dust, but think what a saving in time and dish towels, not only to buy and hem them, but to wash and care for them. Cooking utensils, if greasy, should be wiped out with a soft paper, which is burned at once, or, if not greasy, they should be soaked to soften adhering food material, which may be easily dislodged by the use of an inexpensive reed brush known as the "China-scrub." Study your individual equipment and decide in how far you can use the principles involved, shorten the time and simplify the process of dishwashing; in how much you can eliminate every motion that does not contribute to efficiency and that is not absolutely necessary.

Every food that can be boiled, can be steamed to advantage. Food that is steamed takes up a little moisture, but parts with none of its flavor; several dishes may be steamed at the same time, thereby saving fuel and utensils; and steamed food holds its shape better than boiled. It takes one-fifth more time to steam than to boil, but a steamer requires little attention, especially if the water pan is broad and deep, the cover or door almost steam tight, and a whistle announces low water. If the steamer is large and several dishes are cooked at the same time, especially if the serving dishes are used for cooking, the steamer will prove economical.

It is economical: first, of fuel (money), for one utensil takes the place of many sauce pans; second, of the attention given to the cooking of several dishes (time); and, third, of dish-washing (energy), for the steamer is easy to clean and dry compared with several sauce pans. The simple steamer of our grandmothers, a pan with perforated bottom, set over a kettle of water, is good as far as it goes, but the tall one with broad, deep copper bottom for water will do better service and soon pay for itself.

Recipes for Steamer Cooking

THE following are ideal recipes for cooking by the steamer process—you might try them:

CAULIFLOWER.

Put in serving dish, when ready to cook, and steam 30 to 40 minutes or until tender. Add salt and melted butter to the liquor in the dish and baste the cauliflower with it several times before serving.

Carrots, turnips or onions may be cooked and served in the same way.

FIG PUDDING.

½ cup sugar
½ lb. figs
1 egg (or none)
Rind of half a lemon
2 1-3 cup stale crumbs (not dried bread)
2 tablespoons lemon juice
¼ lb. suet (or 1 cup chopped)
½ cup milk
¾ teaspoon salt
1 teaspoon nutmeg.

Chop the figs; chop the suet, adding a little flour from time to time so it will not stick together. Chop it until it will go through the colander: then mix the fruit and suet: soak the bread in the milk, add the egg and seasonings, and then mix everything. If necessary, water may be added to moisten it: put it in greased baking powder cans; steam them from one and one-half to two hours, the longer the better. Serve with hard sauce.

MEAT LOAF.

1 lb. ground raw beef
1 teaspoon salt
⅛ teaspoon pepper
¾ teaspoonful thyme (or)
½ teaspoonful onions (cut fine)
¾ cupful bread crumbs
1 egg (or none)

Mix well; add water to make moist; line a bread pan with very thin bacon; put the meat in and cover it with bacon: steam three-quarters of an hour (or bake in a slow oven); turn out and serve with or without tomato sauce.

RICE.

Wash 1 cup of unpolished rice; put it in the serving dish with 1½ cups water and 1 teaspoon of salt; place in steamer for three-quarters of an hour or until tender.

Potatoes may be pared and steamed, or, better, steamed and peeled, but they will take about one hour to cook.

CREAMED CARRROTS.

Scrape and slice six carrots of medium size, place in bowl in the steamer for thirty minutes or until tender. Drain the liquor in the dish into a cup and add enough cold milk to make half a pint. Make a sauce, using a cup of the liquid and the following ingredients: heat the carrots up in the sauce and serve:

1 tablespoon butter
1½ tablespoon flour
1 teaspoon sugar
½ teaspoon salt
Pepper
Grating and nutmeg
A little chopped parsley.

APPLES.

Pare and core half dozen apples, or, better still, leave the skins on; place each in a saucedish, with a teaspoon of brown or white sugar and a bit of cinnamon in the center; steam until tender and serve in same dish.

These recipes might be added to indefinitely, but enough of them have been given to illustrate the steamer process, and the method of handling and combining foods in a time-saving, space-saving, energy-saving, device.

There are stil two or three other processes of cooking foods, such as the double-boiler, the fireless, and the casserole, to be considered; but lack of space forces us to defer an explanation of these methods as well as an elaboration of the principle of constructing menus until a later issue of the "Orchard and Farm."

Useful Hints.

A half-spool and a small bolt, about an inch long (screw heads are best), will replace the missing button on pot or kettle covers.—MRS. J. JOHNSON, Corona, Cal.

In making jellies never use overripe fruit. Underripe is far better. Do not use any water with berries, but mash them thoroughly before placing them over the fire to thoroughly cook them, and stir often to prevent scorching. Then strain through a jelly bag and use equal parts of sugar and juice. Set over a quick fire and allow it to boil hard until it foams up. Try a little on a dish set in cold water. If cooked enough, it will jell as soon as cool. When using fruit that doesn't contain a proper amount of acid, add lemon juice. Jellies should never be kept in a damp atmosphere, as it will cause mold to form on top. Cover with melted wax or paper dipped in white of an egg, and paste firmly over tops of glasses.—MRS. C. H. SLOCUM, Fairbrooks, Cal.

FREE Catalog

WE PAY THE POSTAGE

Showing Latest Styles in Wearing Apparel for MEN, WOMEN and CHILDREN.

Sent FREE Upon Request
Ask for Number 64

We offer this Bargain as an Example of the Values Listed.

No. 54 Good style and service are combined in this Charming One-piece Street or House Dress.

The material is excellent quality fine French linish linene. Waist has the new stylishly shaped tab collar, cut circular in back, the tabs in front being very handsomely embroidered in a raised spray design; entire collar piped with white. Revere effect to the left is also piped and set off with soutache braid loops and buttons.

Short set-in sleeves finished with fancy shaped simulated cuffs which are piped and trimmed to conform with revere.

The skirt is one of the fatest styles in vogue. The smart lines are emphasized by a nobby pointed design embellished with soutache braid loops and buttons; waistline and seam down front are piped with white, which adds to the attractiveness of the garment. Deep hem at bottom allows for proper adjustment if necessary. Closes invisibly in front. Colors, Tan or Cadet Blue, with white trimming. Sizes 32 to 44 inches bust measure.

PRICE POSTPAID $1.00

Write today for your copy of this catalog.

Worth $1.50

We guarantee all purchases to be satisfactory or we will promptly refund your money with return expenses included.

Ref. Continental & Com'l National Bank, Capital $30,000,000

CHICAGO MAIL ORDER CO.
INDIANA AVE. & 26TH ST. CHICAGO, ILL.

SUGAR 2c a lb.

CALL FOR COMBINATION ORDER NO. 100.

—Our Best Seller—

25 lb. Sugar (fine dry granulated)	$0.50
2 cans of Oysters or 2 lbs. of Prunes	.25
1 sack Rice or 3 cans Carnation Milk	.25
2 cans Corn, Tomatoes or 6 bars best Laundry Soap	.30
3½ lbs. Small White Beans or 3 lbs. Lima Beans	.25
2 lb. Tea, any flavor or 3 lbs. fancy Coffee	1.00
1 large bottle Flavoring Extract or 2 lbs. best Coffee	.75
3 pkgs. Seeded Raisins or 1 bottle Tomato Catsup	.25
2 cans String Beans or 2 cans Maine Corn	.25
3 lbs. Macaroni, Tapioca or Rice	.25
3 pkgs. Washing Powder or 3 cans Cleanser	.15
1 2 lb. square best Butler or 1 No. 5 pail Pure Lard	.65
1 lb. Fancy Prunes or 1 pkg. Liza Pancake Flour	.15
Total for all unchanged	$5.00

SEND FOR OUR MONEY-SAVING CATALOGUE ON GROCERIES

French Castile Soap, per bar	$0.30
Strawberry Jam, large jars, each	.20
3 cans Carnation Milk for	.25
Tomatoes, 2 cans 15c; dozen	.90
Sugar Corn, 2 cans 15c; dozen	.90
Babbitt's Best Soap, 6 for	.25
Old Dutch Cleanser, 2 for	.15
Sliced Pineapples, 2 cans	.25
Asparagus Tips, per can	.10

A Free Trial Order will make you one of our many well-satisfied Customers.

FREE DELIVERY ACROSS THE BAY. MAIL ORDERS A SPECIALTY. PROMPT SHIPMENTS.

FREESE & CO.

Phone West 25
1260-66 Devisadero, Corner Ellis
San Francisco

STUDY AT HOME

We can fit you for a position which will enable you to command a large salary. Sixty courses, including agriculture, horticulture and automobile engineering, are thorough and practical. Chartered by the State of California in 1903. 50 page catalogue free.

MODERN SCHOOL OF CORRESPONDENCE
Dept. 2 Underwood Building San Francisco

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted FREE
Wilson E. Coleman, Patent Lawyer, Wash., D. C.

Useful and Up-to-Date Patterns

8106—Three-piece skirt, 22 to 32 waist.—For medium size, skirt will require 4¼ yards of material 27, 3¼ yards 36, 2⅝ yards 44 in. wide. The width at the lower edge is 1 yard and 28 inches.

8107—Child's dress, 1, 2 and 4 years.—For 4-year size dress will require 1⅜ yds. of plain material 36 in. wide with ⅞ yd. 27 for the yoke and panel; or 2 yds. 27, 1⅝ yds. 36, 1¼ yds. 44 in. wide if one material is used throughout, with ¾ yd. of insertion, 1½ yds. of edging, 1⅛ yds. of beading.

8111—Boy's Shirt, 6 to 12 years—For 10-year size, blouse will require 2½ yds. of material 27, 2 yds. 36, 1¾ yds. 44 in. wide.

8118—Apron with kimono sleeves, for misses and small women, 14, 16 and 18 years—For the 16-year size, the apron will require 4½ yds. 27 or 30 in. wide.

8119—Boy's Suit, 2 to 6 years—For the 4-year size suit will require 3½ yds. of material 27, 2⅞ yds. 36, 2¼ yds. 44 in. wide; with ¾ yd. 27 for collar, cuffs and belt, 5 yds. of braid.

8121—Child's Shirt and Drawers, 6 months, or 1 and 2 years—For the 2-year size, shirt will require 1⅜ yds. of material 27, 1 yd. 36; the drawers ⅞ yd. 27 in. wide.

8123—Three-piece Skirt, 22 to 32 waist—For the medium size skirt, will require 5½ yds. of material 27, 3½ yds. 36, 44 or 52 in. wide. The width of the skirt at the lower edge is 1 yd. and 25 in.

8124—Empire Negligee, 34 to 42 bust—For the medium size, gown will require 6 yds. of material 27, 5 yds. 36, 4¼ yds. 44 in. wide, with 5 yds. of ribbon for frills; the width of the skirt at the lower edge is 2 yards.

8132—Fancy Blouse, 34 to 44 bust—For the medium size, blouse will require 3⅝ yds. of material 27, — yds. 36, 1⅞ yds. 44 in. wide.

8145—Semi-Princess Gown, 34 to 42 bust—For the medium size, gown will require 6 yds. of material 27 or 36, 4½ yds. 44 in. wide with ¼ yd. of velvet for the collar and cuffs, 1 yd of ribbon 8 in. wide for the girdle.

8148—Girl's Dress, 8 to 14 years—For the 12-year size, blouse will require 3½ yds. of material 27, 2⅞ yds. 36, 2 yds. 44 in. wide; the skirt and trimming 3 yds, 27 or 36, 2¼ yds. 44 in. wide.

8150—Semi Princess Dress for misses, 16 and 18 years, or small women—For the 16-year size dress will require 6¼ yds. of material 27, 4¾ yds. 36, 4½ yds. 44 in wide, with 1½ yds. of lace, 6¾ yds. of banding, ⅝ yds. 18 in. wide for chemisette.

Any pattern will be sent to your address on receipt of 10 cents. Address all pattern orders to Virginia Kirtley, Household Department, "Orchard and Farm," Hearst Bldg., San Francisco, Calif.

KOVERALL NIGHTIES

The new hygienic sleeping garment for boys and girls one to eight years old

His Morning Excercise—

just like "Dads" are a daily source of joy to the Koverall Nightie boy. How straight he stands, how he glows with health and strength, and what a marvelous muscle he exhibits so proudly.

Koverall Nighties keep the children warm as toast while they sleep, no matter if they do kick off the covers.

They cannot get them on soon enough at night and are loath to take them off in the morning.

They love the attractive designs of the warm, fleecy kindergarten materials, Teddy bears, Indians, pussy cats, little chicks, and various other Mother Goose subjects. Koverall Nighties are also made of white Princess flannels, white drills and mercerized cloths in white, light blue and champagne.

Koverall Nighties button up the front; have very wide hem so that they cannot spread open; have drop back, long sleeves and a pocket. So easy to put on. Off and on in a jiffy.

Koverall Nighties Sell for 75c each

A New Suit FREE If It Rips

Look for this red woven label

KOVERALL NIGHTIES
TRADE MARK
LEVI STRAUSS & CO.
SAN FRANCISCO, CAL.

Awarded Gold Medal, Mechanics Fair, 1913

If your dealer cannot supply, we will send, charges prepaid on receipt of price

Levi Strauss & Co.
Mfrs., San Francisco

50c Postpaid

Only Awl Selling as Low as 50c.

Lowest price—best work! Why pay more? Sews shoes, harness, saddles, canvas, carpets, quilts; repairs shoes, buggy tops, &c. Wonderful convenience and money-saver. Lasts a lifetime.

BIG winner for Agents! Send 50c today.

LAWTON & BUSHMAN, Dept. 1 1 BURLINGTON, ont.

ELEGANT Thin Model 20 YEAR Watch $3.50

Hunting case beautifully engraved, gold finished throughout, stem wind and stem set, fitted with jewel adjusted movement, guaranteed correct timekeeper, with long gold finished chain for Ladies, vest chain or silk fob for Gents

STEM WIND STEM

HUNTING CASE SET

IF YOU SEE IT YOU WILL BUY IT. Let us send it C.O.D. for examination at your express office, and if you think it is barrain and equal in appearance to any $15.00 gold finished watch pay the express agent our special sales price $3.50. Our 20 year guarantee sent with each watch. Mention if you want LADIES' MEN'S or BOYS' SIZE. Address Diamond Jewelry Co., C 22, 189 W. Madison St. Chicago, Ill.

The Household Exchange

EACH month "Orchard and Farm" will give prizes for the best household hints received.

As a special feature the suggestions for the March issue may include anything in the way of housecleaning methods that will be of interest to country women. Have you any methods of cleaning house, renovating furniture, rugs, carpets or wall coverings that would be helpful to your neighbor? If so, send them in.

The following rules must be observed in writing for this department or no attention will be paid to the suggestions:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only.

Not more than two suggestions a month may be sent by one person. Do not send a letter with your suggestion. The suggestion itself is enough.

The editor reserves the right to publish any suggestions, whether or not they win a prize.

This contest is not confined to California alone, but is open to "Orchard and Farm" subscribers in any State.

Address all your suggestions to Virginia Kirtley, Household Editor, "Orchard and Farm," Hearst Building, San Francisco, Cal.

Following are the prize winners in the Household Exchange for this month and the prizes awarded. So numerous and so practical were the home-sewing suggestions that in addition to the usual five prizes this month's list contains thirty gifts sent direct to contributors, whether the suggestion appears in the February issue or a later number.

First Prize, Mrs. A. L. Baty, Cedarville, Cal.—Aluminum Coffee Percolator, guaranteed ------$3.50

Second Prize, Mrs. C. R. Field, 261 Spencer ave., San Jose, Cal.—Set of six Silver Tablespoons and six Teaspoons----------$3.00

Third Prize, Mrs. P. A. Smith, Richvale, Cal.—Set of six Silver Knives and Forks----------$2.50

Fourth Prize, Mrs. D. H. Stovall, Philomath, Ore.—Silver Sugar Shell and Butter Knife--------$2.00

Fifth Prize, Miss M. E. McDaniel, Templeton, Cal. — Household Scales ----------$1.75

For each of fifteen suggestions not included in the above list—One Ezy-Hem Skirt Gauge.

For suggestions worthy of being remembered by every housekeeper—Fifteen Handy Needle Cases filled with every imaginable kind of Needle, Pin, Bodkin, Hairpin and Safety Pin.

Following are the prize-winning suggestions:

A Pressing "Ham."

Probably all amateur dressmakers have trouble in pressing curved seams—that is, the bust of a coat or the hip seams of a skirt. The best method of pressing such seams, in order to make them retain their shape, is by means of a "ham." It is easily made, in fact any woman can make it. Cut two pieces of ticking an oblong shape, ten inches long and seven inches wide. Sew them together, leaving one of the larger corners open. Pack it tightly with sawdust or bran. Then sew corner. To press the bust seam of a coat, place the largest point of the bust over the small end, and you can press without danger of stretching the seam out of shape. The seams in the hip of a skirt can also be pressed and will hold their shape splendidly. This is a tailor's device.—MRS. A. L. BATY.

Making Fine Tucks and Hems.

When making hand-run tucks, try running them through your sewing machine tucker. Use quite a coarse needle, but no thread. In this way even tucks and regular stitches are assured. In the same way a narrow hem on napkins can be made perfectly even by using the narrow hemmer of the machine, but no thread.—MRS. C. R. FIELD.

Easy Hemstitching.

To hemstitch pillow slips, sheets or even under garments, pull threads, loosen the tension on your machine a little, and with a medium stitch, stitch the hem down on center of space where threads are pulled, and when stitched pull up in place and you will be delighted.—MRS. P. A. SMITH.

Serviceable Curtains.

For curtains and dresser scarfs nothing equals the 20-cent scrim, which is more beautiful for these articles than the finer and more expensive grades.

When I made my curtains I measured the length of the window, allowing a two-inch hem for the curtain rod to slip through, and a three-inch hem for finishing ends. I cut a width in half, hemstitching on the raw edge a one and one-half inch hem. These half widths were hung on each side of the window, placing the hemstitched edges inward. Then a valance, cut as wide as the half widths, was hemstitched and hung between.

With a narrow row of tatting (or you could use a crocheted edge) made of cream luster cotton these make dainty, serviceable curtains, and the cost was only $2 for curtaining two very large windows, a double window and a group of three small ones.—MRS. D. H. STOVALL.

How to Make a Rug.

An easy way to make a rug of half-worn cloth or new, using colors preferred, cut or tear strips about three-fourths of an inch wide and sew lengths together. Have wire about one-fourth of an inch through, bent like a hairpin, about ten inches long, one and a half inches wide. Wrap the strips of cloth from the closed end of the wire, over one wire, pass between and under the other side, and over back and forth, until wire is full. It will hold a lot if the cloth is pushed back. Place the open end against the pressure foot of the sewing machine with the right end of a firm piece of cloth under the size of rug wanted. Sew between the wires, letting off cloth as needed to cover foundation. Each row should be pushed a little under the last one made. The little loops may be cut open if preferred. A diamond is easy to mark in the center.—MISS M. E. McDANIEL.

In Time

"I suppose," said the employer, "you think you could teach me to run my own business."

"Probably," replied young Mr. Freshwell. "But it would take time."

Calm Osculation

"I hear they are passionately in love with each other."

"It might pass for passion in Boston. They kiss each other with their eyeglasses on."

Inadvertence

"Before we were married you told me I was as pretty as a picture."

"And so you were, Henrietta," replied Mr. Meekton. "But they have been getting out a lot of handsome postcards since then."

Also Rags

"Kipling says a woman is a rag and a bone and a hank of hair."

"My wife is always buying additional hanks."

FIVE BEAUTIFUL WAISTS AT $1 EACH!

These Waists will convince you of the Splendid Values we offer.
WE PAY ALL MAIL OR EXPRESS CHARGES.

Catalogue Free
A postal card will bring you this beautiful Spring and Summer Fashion Catalogue, containing over 2,000 illustrations and descriptions of the very latest New York styles in wearing apparel. We will gladly send it absolutely FREE. Be sure to write for your copy to-day. Ask for Catalogue No. 62F.

Our Catalogue contains the very latest and best New York styles in wearing apparel. You will find in it many helpful suggestions and it will enable you to dress as the fashionable New Yorker dresses without spending any more than if you bought your clothes in your own town.

Descriptions of the Dainty Waists Illustrated Above.

2F95 Beautiful New Evangeline House made of an extra good quality washable Canton Crepe. An attractive style feature of this pretty new model is the gathered ruffle of self material which extends around neck and down each side of front as pictured, falling in graceful cascade folds. Waist is cut slightly decolleto at neck, where it is held in place by a chic band of black velvet ribbon. The long sleeves are trimmed with velvet ribbon to match and at the wrist a ruffle of self material is joined to sleeve by French veining. The kimono sleeves are outlined by French veining to correspond. The back is plain. Waist fastens invisibly in front. White, tan or King blue. Sizes 32 to 44 bust. Price, $1.00 All Mail or Express Charges Paid by Us.

2F96 Very Dainty Blouse made of a fine sheer white washable All-over Embroidered Voile. This pretty model has a vest of white Brussels net fastening with white crochet buttons. It is cut in a V at the neck, where it is trimmed with a vanity band of black velvet ribbon, and a double plaited Medici frill. The long cap effect sleeves are finished with plaited ruffles. Sleeves at shoulder are designed in kimono effect and joined to body of waist by white cording. The vest also is outlined by cording. Back is of embroidered voile to match front. Comes in white only. Sizes 32 to 44 bust. Price, All Mail or Express $1.00 Charges Paid by Us.

2F96A Same as above with three-quarter length sleeves. All Mail and Express Charges Paid by Us $1.00

2F97 A Jaunty Blouse Shirt Waist made of fine sheer washable striped Japonika Silk with Jacquard silk dots in self color, a beautiful fabric woven of silk and cotton, looks like China silk, gives better wear. Blouse is made with a vest effect and turndown collar of plain white Japonika silk. It fastens through a vest with buttons in contrasting color. The regular style sleeves are joined to body of waist by pretty white cording and the deep cuffs on the long sleeves are corded to match. Waist has plain shirt back and comes in white with blue or black stripes. Sizes 32 to 44 bust. Special Price, All Mail or Express Charges Paid by Us.....$1.00

2F98 You will like this Dressy Little Blouse when you see it, and you will be amazed at the wonderful quality for the price. It is made of a beautiful imported sheer white washable voile. Front is entirely covered with embroidery as pictured and the cap effect full-length sleeves are embroidered on shoulder. Back is of plain voile. Waist is made with full blouse effect, now so fashionable and the slightly low-cut neck is finished with a chic bow tie. Sleeves are joined to waist by embroidery veining, and the pointed collar and turnback cuffs are trimmed with veining to match. Fastens invisibly in the front. Comes in white only. Sizes 32 to 44 bust. Price, All Mail or Express Charges Paid by Us. $1.00

2F99 Blouse of Extremely Effective Style, made of sheer white washable voile, daintily embroidered on the front as pictured. Short sleeves are in kimono style, joined at waist by crochet lace insertion. A band of the same pretty lace extends from neck to cuff of the three-quarter length sleeves, which are finished with dainty Marie Antoinette ruffles of knife-plaited voile. A pretty feature of the waist is the plaited voile frill which frames the low-cut neck and extends down front. The turn down collar is of embroidered voile daintily edged with a plaited frill to match front. In the back there are three clusters of fine tucks. Fastens in front with white crochet buttons. White only. Sizes 32 to 44 bust. Price, All Mail or Express Charges Paid by Us $1.00

We Satisfy You or Refund Your Money

BELLAS HESS & CO
WASHINGTON, MORTON & BARROW STS.
NEW YORK CITY, N.Y.

We Pay All Mail or Express Charges

Make Life Easier for Farm Women

—By Edward Hyatt, State Superintendent of Public Instruction—

BACK to the soil is a popular watchword. Those that think are able to see that the future of our civilization depends on the country, upon the farms. The country is the great breeding place of men, as it is of horses. The city is the market for men and horses. The city seizes the best and the strongest of men and horses and uses them, rewards them. It gives them rich food, beautiful harness, luxurious stables. It demands the best there is in them and keeps them up to the highest possible pitch, day and night. It wears them out—men and women and horses. As soon as they flag in the fierce competition, they are sent to the boneyard, inexorably, without pity.

But the young, both men and horses, must grow up in the country. The young, in order to grow up, must have air, room, sunshine, exercise, play, natural milk, simpicity. It is a horrible thing to bring up a child in a city. The city has no need for children. They are in the way. The landlord doesn't want them, the neighbors frown upon them, the policeman harries them. Everybody conspires against them to deprive them of their birthright. The whole scheme of city life is opposed to childhood.

Often the children unfortunate enough to be raised in the city survive the unfavorable conditions and live to the age of maturity. But they are like the white, wriggly things that scurry for cover when one turns over a big stone in the pasture. They are too clean, too stiffly starched, too repressed, too gray and bloodless. They are precocious, fashionable, sharp featured, preternaturally wise to the fraternity, the play and other artificialities that infest city life. They are not children at all, and never were and never will be. They are merely the white waste of the city.

One of the chief causes of the constant tide from the country into the city is the hard usage that the farm gives to the woman. The rural life gives the woman a hard deal, and she resents it, rebels against it, exerts a constant pressure that finally results in the family's leaving the farm.

The woman in the country has a barren and hopeless life. She must lift and tug and labor to the limit of her strength day and night, year upon year, with no prospect of relief. She must cook for hired men, care for milk, make butter, take the responsibility for poultry and garden, and, worst of all, do the washing. Three meals a day and wash the dishes, Sunday, weekday, holiday, winter, summer, in season and out of season, time out of mind, world without end. And amid it all the labors and dangers of child bearing.

No wonder her soul sickens and her mind revolts. Of course she would rather be the wife of a street car conductor or a ribbon salesman, where she would only have to care for a few rooms and where she could go to the "movies" in the evening. We must not expect her to look into the future and see that in leaving a life of strenuous endeavor she is consigning her race to weakness and extinction. She cannot see that formaldehyde milk, lack of air, food, room and sunshine will remove her and her seed from the earth in three generations.

While the man has heavy work, economy, responsibility, on the farm, his life is much more interesting than the woman's. He can rest at night. He can get the machinery he needs. He has the joy of managing, of creating. He gets out for social converse with his neighbors, on the road, at the blacksmith shop, in the town. He can see the mortgage going down and the farm resources going up.

Not so the wife. She is oppressed and frightened with the hopeless slavery of it all, unrelieved by any of the graces, leisures or kindlinesses of life. The remote prospect of ultimate success and independence does not atone to her for the loss of the small currency of life. She wants the kindly smile, the appreciative look, the pressure of the hand, the little trip away, the friendly visit, the book, the paper, the leisure hour, the occasional relief from endless, everlasting drudgery and responsibility. The home, so restful and welcome to everyone else, is not restful to the housewife. It is to her the symbol of hurry and worry, the place to escape from.

One of the things to do for rural America is to make the life of the rural woman easier and more attractive, even at the expense of slower profits for the middle men and longer postponement for the complete success of the farmer. The open country is the breeding ground of the nation.

Little Home Hints

Child's Dress Hint—When making the long waisted, short skirt dresses for little girls, mothers will find it a great help to take embroidered flouncing or sheer material twice the length desired for the skirt. Fold evenly, without cutting, finish the underpiece with lace edging (and a few tucks and insertion if you wish) gather and sew to the waist This makes dress and petticoat combined, saves time and labor both in making and dressing the little ones.—MRS. ENNIS D. WAIT, Jefferson, Ore.

Dustless Duster and Mop—Dip a yard square piece of black cheesecloth in equal parts of kerosene and gasoline or distillate. Hang out to dry, then repeat the process two or three times. For mop to use on polished or painted floors, take a large piece of woolen material and dip the same as for the duster. When entirely dry place in mop handle. This will prove a wonderful labor saver to any housewife.—MRS. D. CURTIS STANION, Soquel, Cal.

How to Give Castor Oil—The way I give my children castor oil. I break an egg in a glass, put in the castor oil, add to it a little lemon juice and sugar, beat it all together well and let the child drink it. Try this and see how the little ones like it.—MRS. KATIE JOHNSON, Arbuckle, Colusa county, Cal.

Marking Poison—When placing poison on the shelf, drive a pin half way into the cork. This will readily serve as a warning, day or night. MRS. GEORGE WEEKS, Healdsburg, Cal.

Chicks' Drinking Fountain—Fine drinking fountains for young chickens can be made by making a hole in a small baking powder can about one-half an inch from the top. Fill with water, then place a tin cover larger in diameter than the can and invert. The water will not rise any higher than the hole in the can and little chickens can drink, but cannot get their feet in the water. MRS. H. T. ANDERSON, Exeter, Cal.

To separate each grain of rice use three pints of boiling water to one cupful of well washed rice, salt to taste and cook till done. Now pour in about three pints of either hot or cold water, stir well, strain through a colander, and each grain will be perfect. The water strained therefrom may be used for starching clothes.—MRS. J. J. HALL JR., R. F. D. No. 1, Napa, Cal.

The Magic Flight of Thought

AGES ago, Thor, the champion of the Scandinavian gods, invaded Jotunheim, the land of the giants, and was challenged to feats of skill by Loki, the king.

Thor matched Thialfi, the swiftest of mortals, against Hugi in a footrace. Thrice they swept over the course, but each time Thialfi was hopelessly defeated by Loki's runner.

Loki confessed to Thor afterward that he had deceived the god by enchantments, saying, "Hugi was my thought, and what speed can ever equal his?"

But the flight of thought is no longer a magic power of mythical beings, for the Bell Telephone has made it a common daily experience.

Over the telephone, the spoken thought is transmitted instantly, directly where we send it, outdistancing every other means for the carrying of messages.

In the Bell System, the telephone lines reach throughout the country, and the thoughts of the people are carried with lightning speed in all directions, one mile, a hundred, or two thousand miles away.

And because the Bell System so adequately serves the practical needs of the people, the magic of thought's swift flight occurs 25,000,000 times every twenty-four hours.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

Mayer HONORBILT WORK SHOES

Mayer Honorbilt Work Shoes outwear all other shoes because they are made from specially selected, tough and seasoned stock—heavy oak tanned soles—solid counters—double leather toes and double rows of stitching. They stand hard knocks and rough wear, yet are not heavy or clumsy looking. For strength, wearing quality and comfort demand Mayer Honorbilt Work Shoes.

Made of "RESISTO VEAL"

The uppers of Mayer Honorbilt Work Shoes are made of the wonderful wear-resisting leather "Resisto Veal"—the new leather that resists even ammonia of the barnyard, and the alkali in the soil, and remains soft and pliable. This is the best wearing leather ever put into work shoes.

WARNING—Always be sure and look for the Mayer name and trade mark on the sole. If your dealer cannot supply you, write to us.

We make Mayer Honorbilt Shoes in all styles for men, women and children; Drysox, the wet weather shoe; Yerma Cushion Shoes, and Martha Washington Comfort Shoes.

F. Mayer Boot & Shoe Co., Milwaukee

STAND HARD KNOCKS AND ROUGH WEAR

THE BANDBOX

—By Louis Joseph Vance—

CHAPTER XIII—Continued.

"THOUGHT I heard you moving around upstairs. How be you? Hungry? I've got a bite ready."

"I'd like a drink of water, please," said Eleanor—"plain water," she added with a significance that could not have been overlooked by a guilty conscience.

But the woman seemed to sense no ulterior meaning. "I'll fetch it," she said in a good-humored voice, going to the sink.

While she was manipulating the pump, the girl moved nearer, frankly taking stock of her. The dim impression retained from their meeting in the early morning was merely emphasized by this second inspection; the woman was built on generous lines—big-boned, heavy and apparently immensely strong. A contented and easy-going humor shone from her broad, coarsely featured countenance, oddly contending with a suggestion of implacable obstinacy and tenacious purpose.

"Here you are," she said presently, extending a glass filmed with a breath of the ice-cold liquid it contained.

"Thank you," said Eleanor; and drank thirstily. "Who are you?" she demanded point blank, returning the glass.

"Mrs. Clover," said the woman as bluntly, if with a smiling mouth.

"Where am I?"

"Well"—the woman turned to the stove and busied herself with coffee-pot and frying-pan while she talked—"this was the Wreck Island House oncet upon a time. I calculate it's that now, only it ain't run as a hotel any more. It's been years since there was any summer folks come here—place didn't pay, they said; guess that's why they shet it up and how your pa come to buy it for a song."

"Where is the Wreck Island House, then?" Eleanor put in.

"ON Wreck Island, of course."

"And where is that?"

"In Long Island Sound, about a mile off 'n the Connecticut shore. Pennymint Center's the nearest village."

"That means nothing to me," said the girl. "How far are we from New York?"

"I couldn't rightly say—ain't never been there. But your pa says—I heard him tell Eph once—he can make the run in his autymobile in an hour and a half. That's from Pennymint Center, of course."

Eleanor pressed her hands to her temples, temporarily dazed by the information. "Island," she repeated—"a mile from shore—New York an hour and a half away . . . !"

"Good, comfortable, tight little island," resumed Mrs. Clover, pleased, it seemed, with the sound of her own voice; "you'll like it when you come to get acquainted. Just the very place for a girl with your trouble."

"My trouble? What do you know about that?"

"Your pa told me, of course. Nervous prostration's what he called it—says as you need a rest with quiet and nothing to disturb you—plenty of good food and sea air—"

"Oh stop!" Eleanor begged frantically.

"Land!" said the woman in a kindly tone—"I might 've known I'd get on your poor nerves, talking all the time. But I can't seem to help it, living here all alone like I do with nobody but Eph most of the time. . . . There!" she added with satisfaction, spearing the last rasher of bacon from the frying-pan and dropping it on a plate—"now your breakfast's ready. Draw up a chair and eat hearty."

She put the plate on the red table-cloth, flanked it with dishes containing soft-boiled eggs, bread and butter and a pot of coffee of delicious savour, and waved one muscular arm over it all with the gesture of a benevolent sorceress. "Set to while it's hot, my dear, and don't you be afraid; good food never hurt nobody."

Momentarily, Eleanor entertained the thought of mutinous refusal to eat, by way of lending emphasis to her indignation; but hunger overcame the attractions of this dubious expedient; and besides, if she were to accomplish anything toward regaining her freedom, if it were no more than to register a violent protest, she would need strength; and already she was weak from want of food.

So she took her place and ate—ate ravenously, enjoying every mouthful—even though her mind was obsessed with doubts and fears and burning anger.

"You are the caretaker here?" she asked as soon as her hunger was a little satisfied.

"Reckon you might call us that, me and Eph; we've lived here for five years now, taking care of the island—ever since your pa bought it."

"Eph is your husband?"

"That's him—Ephraim Clover."

"And—doesn't he do anything else but—caretake?"

"Lord bless you, he don't even do that; I'm the caretakeress. Eph don't do nothing but potter around with the motor-boat and go to town for supplies and fish a little and 'tend to the garden and do the chores and—"

"I should think he must keep pretty busy."

"Busy? Him? Eph? Lord! he's the busiest thing you ever laid your eyes on—poking round doing nothing at all."

"And does nobody ever come here . . . ?"

"Nobody but the boss."

"Does he often—?"

"That's as may be and the fit's on him. He comes and goes, just as he feels like. Sometimes he's on and off the island half a dozen times a week, and again we don't hear nothing of him for months; sometimes he just stops here for days and mebbe weeks, and again he's here one minute and gone the next. Jumps round like a flea on a griddle, I say; you can't never tell nothing about what's he's going to do or where he'll be next. . . . My land o' mercy, Mr. Searle! What a start you did give me!"

The man had succeeded in startling both women, as a matter of fact. Eleanor, looking suddenly up from her plate on hearing Mrs. Clover's cry of surprise, saw him lounging carelessly in the hall doorway, where he had appeared as noiselessly as a shadow. His sly, satiric smile was twisting his thin lips, and a sardonic humor glittered in the pale eyes that shifted from Eleanor's face to Mrs. Clover's, and back again.

"I wish," he said, nodding to the caretaker, "you'd slip down to the dock and tell Eph to have the boat ready by seven o'clock."

"Yes, sir," assented Mrs. Clover hastily. She crossed at once toward the outer door. From her tone and the alacrity with which she moved to do his bidding, no less than from the half-cringing look with which she met his regard, Eleanor had no difficulty in divining her abject fear of this man whom she could, apparently, have taken in her big hands and broken in two wtihout being annoyed by his struggles.

"And, here!" he called after her—"supper ready?"

"Yes, sir—quite."

"Very well; I'll have mine. Eph can come up as soon as he's finished overhauling the motor. Wait a minute; tell him to be sure to bring the oars up with him."

"Yes, sir, I will, sir."

Mrs. Clover dodged through the door, and, running down the pair of steps from the kitchen stoop to the ground, vanished behind the house.

"Enjoying your breakfast, I trust?"

Eleanor pushed back her chair and rose. She feared him, feared him as she might have feared any loathly, venomous thing; but she was not in the least spiritually afraid of him. Contempt and disgust only emphasized the quality of her courage. She confronted him without a tremor.

"Will you take me with you when you leave this island to-night?" she demanded.

He shook his head with his derisive smile. She had discounted that answer.

"How long do you mean to keep me here?"

"That depends on how agreeable you make yourself," he said obscurely.

"What do you mean?"

"Merely that . . . well, it's a pleasant, salubrious spot, Wreck Island. You'll find it uncommonly healthful and enjoyable, too, as soon as you get over the loneliness. Not that you'll be so terribly lonely; I shall be here more or less, off and on, much of the time for the next few weeks. I don't mind telling you, in strict confidence, as between father and child, that I'm planning to pull off something pretty big before long; of course it will need a bit of arranging in advance to make everything run smoothly, and this is ideal for a man of my retiring disposition, not overfond of the espionage of his fellow-men. So, if you're docile and affectionate, we may see a great deal of one another for some weeks—as I said."

"And if not——?"

"Well"—he waved his hands expressively—"of course, if you incline to be forward and disobedient, then I shall be obliged to deny you the light of my coutnenance, by way of punishment."

She shook her head impatiently. "I want to know when you will let me go," she insisted, struggling against the oppression of her sense of helplessness.

"I really can't say." He pretended politely to suppress a yawn, indicating that the subject bored him inordinately. "If I could trust you——"

"Can you expect that, after the way you treated me last night—this morning?"

"Ah, well!" he said, claw-like fingers stroking his lips to conceal his smile of mockery.

"You lied to me, drugged me, robbed me of the necklace, brought me here. . . ."

"Guilty," he said, yawning openly.

"Why? You could have taken the necklace from me at the hotel. Why must you bring me here and keep me prisoner?"

"The pleasure of my only daughter's society. . . . ."

"Oh, you're despicable!" she cried, furious.

He nodded thoughtfully, fumbling with his lips.

"Won't you tell me why?" she pleaded.

He shook his head. "You wouldn't understand," he added in a tone of maddening commiseration.

"I shan't stay!" she declared angrily.

"Oh, I think you will," he replied gently.

"I'll get away and inform on you if I have to swim."

"It's a long, wet swim," he mused aloud—"over a mile, I should say. Have you ever swum over a hundred yards in your life?"

She was silent, choking with rage.

"And furthermore," he went on, "there are the Clovers. Excellent people, excellent—for my purposes. I have found them quite invaluable—asking no questions, minding their own business, keen to obey my instructions to the letter. I have already instructed them about you, my child. I trust you will be careful not to provoke them; it'd be a pity. . . you're rather good looking, you know. . ."

"What do you mean by that?" she stammered, a little frightened by the secret menace in his tone. "What have my looks to do with . . . ?"

"Everything," he said softly—"everything. Not so far as Ephraim is concerned; I'll be frank with you—you needn't fear Ephraim's hurting you, much, should you attempt to escape. He will simply restrain you, using force only if necessary. But Mrs. Clover . . . she's different. You mustn't let her deceive you; she seems kindly disposed enough; she's pleasant spoken but . . . well, she's not fond of pretty women. It's an obsession of hers that prettiness and badness go together. And Ephraim is fond of pretty women—very. You see?"

"Well?"

"Well, that's why I have these people in so strong a hold. You see, Ephraim got himself into trouble trying to pull off one of those bungling, amateurish burglaries that his kind go in for so extensively; he wanted the money to buy things for a pretty woman. And he was already a married man. You can see how Mrs. Clover felt about. She—ah—cut up rather nasty. When she got through with the other woman, no one would have called her pretty any longer. Vitriol's a dreadful thing. . . . ."

He paused an instant, seeming to review the case somberly. "I managed to get them both off, scot free; and that makes them loyal. But it would go hard with anyone who tried to escape to the mainland and tell on them—to say nothing of me. . . . Mrs. Clover has ever since been quite convinced of the virtue of vitriol. She keeps a supply handy most of the time, in case of emergencies. And she sleeps lightly; don't forget that. I hate to think of what she might do if she thought you meant to run away and tell tales."

Slowly, step by step, guessing the way to the outer door, the girl backed away from him, her face colorless with horror. Very probably he was lying to frighten her; very possibly (she feared desperately) he was not. What she knew of him was hardly reassuring; the innate, callous depravity that had poisoned this man beyond cure might well have caused the death-in-life of other souls. What he was capable of, others might be; and what she knew him to be capable of, she hardly liked to dwell upon. Excusably she conceived her position more than desperate; and now her sole instinct was to get away from him, if only for a little time, out of the fetid atmosphere of his presence, away from the envenomed irony of his voice—away and alone, where she could recollect her faculties and again realize her ego, that inner self that she had tried so hard to keep stainless, unspoiled and unafraid.

He watched her as she crept inch by inch toward the door, his nervous fingers busy about his mouth as if trying to erase that dangerous, evil smile.

"Before you go," he said suddenly,

"I should tell you that you will be alone with Mrs. Clover to-night. I'm going to town, and Ephraim's to wait with the boat at Pennymint Point, because I mean to return before morning. But you needn't wait up for me; Mrs. Clover will do that."

Eleanor made no reply. While he was speaking she had gained the door. As she stepped out, Mrs. Clover reappeared, making vigorously round the corner of the house.

Passing Eleanor on the stoop, she gave her a busy, friendly nod, and hurried in.

"Eph'll be up in half an hour," she heard her say. "Shall I serve your supper now?"

"Please," he said quietly.

The girl stumbled down the steps and blindly fled the sound of his voice.

CHAPTER XIV

The Strong-Box.

HER initial rush carried Eleanor well round the front of the building. Then, as suddenly as she had started off, she stopped, common sense reasserting itself to assure her that there was nothing to be gained by running until exhausted; her enemy was not pursuing her. It was evident that she was to be left to her own devices as long as they did not impel her to attempt an escape—as long as she made herself supple to his will.

She stood for a long minute, very erect, head up and shoulders back, eyes closed and lips taut, her hands close-clenched at her sides. Then drawing a long breath, she relaxed and, with a quiet composure admirably self-enforced, moved on, setting herself to explore and consider her surroundings.

The abandoned hotel faced the south, overlooking the greater breadth of Long Island Sound. In its era of prosperity, the land in front of it to the water's edge, and indeed for a considerable space on all sides, had been clear—laid out, no doubt, in grassy lawns, croquet grounds and tennis courts; but in the long years of its desuetude these had reverted to the primitive character of the main portion of the island, to a tangle of undergrowth and shrubbery sprinkled with scrub-oak and stunted pines. In one spot only, a meager kitchen garden was under cultivation.

Southward, at the shore, a row of weather-beaten and ramshackle bathhouses stood beside the rotting remnants of a long dock whose piles, bereft of their platform of planks, ran out into the water in a dreary double rank.

Westward, a patch of woodland—progenitor by every characteristic of the tangle in the one-time clearing—shut off that extremity of the island where it ran out into a sandy point. Eastward lay an extensive acreage of low, rounded sand dunes, held together by rank beach grass and bordered by a broad, slowly shelving beach of sand and pebbles. To the north, at the back of the hotel, stretched a waste of low ground finally merging into a small salt marsh. Across this wandered a thin plank walk on stilts which, over the clear water beyond the marsh, became a rickety landing-stage. At some distance out from the latter a long, slender, slate-coloured motor-boat rode at its moorings, a rowboat swinging from its stern. In the larger craft Eleanor could see the head and shoulders of a man bending over the engine — undoubtedly Mr. Ephraim Clover. While she watched him, he straightened up and, going to the stern of the motor-boat, began to pull the dory in by its painter. Having brought it alongside, he transshipped himself awkwardly, then began to drive the dory in to the dock. Eleanor remarked the fact that he stood up to the task, propelling the boat by means of a single oar, thrusting it into the water until it struck bottom and then putting his weight upon it. The water was evidently quite shallow; even where the motor-boat lay moored, the oar disappeared no more than half its length.

Presently, having gained the landing-stage, the man clambered upon it, threw a couple of half-hitches in the painter round one of the stakes, shouldered the oars and began to shamble toward the hotel; a tall, ungainly figure blackly silhouetted against the steel-blue sky of evening.

Eleanor waited where she was, near the beginning of the plank walk, to get a better look at him. In time he passed her, with a shy nod and sidelong glance. He seemed to be well past middle-age, of no pretensions whatever to physical loveliness and (she would have said) incurably lazy and stupid; his face dull and heavy, his whole carriage eloquent of a nature of sluggish shiftlessness.

He disappeared round the house, and a moment later she heard Mrs. Clover haranguing him in a shrill voice of impatience little resembling the tone she had employed with the girl.

For an instant Eleanor dreamed wildly of running down to the dock, throwing herself into the rowboat and casting it off to drift whither it would. But the folly of this was too readily apparent; even if she might be sure that the tide would carry her away from the island, the water was so shallow that a man could wade out to the motor-boat, climb into it and run her down with discouraging ease. As for the motor-boat—she hadn't the least idea of the art of running a motor; and besides, she would be overhauled before she could get to it; for she made no doubt whatever that she was being very closely watched, and would be until the men had left the island. After that . . . a vista of days of grinding loneliness and hopeless despair opened out before her disheartened mental vision.

She resumed her aimless tour of inspection, little caring whither she wandered so long as it was far from the house, as far as possible from . . . him.

Sensibly the desolate spirit of the spot saturated her mood. No case that she had ever heard of seemed to her so desperate as that of the lonely, helpless girl marooned upon this wave-bound patch of earth and sand, cut off from all means of communication with her kind, her destiny at the disposal of the maleficent wretch who called himself her father, her sole companions two alleged criminals whose depravity, if what she had heard were true, was subordinate only to his.

She could have wept, but wouldn't; the emotion that oppressed her was not one that tears would soothe, her plight not one that tears could mend.

Her sole comfort resided in the fact that she was apparently to be let alone, free to wander at will within the boundaries of the island.

Sunset found her on a little sandy hillock at the western end of Wreck Island—sitting with her chin in her hands, and gazing seawards with eyes in which rebellion smoldered. She would not give in, would not abandon hope and accept the situation at its face value, as irremediable. Upon this was she firmly determined; the night was not to pass unmarked by some manner of attempt to escape or summon aid. She even found herself willing to consider arson as a last resort; the hotel afire would make a famous torch to bring assistance from the mainland. Only . . . she shrank from the attempt, her soul curdling with the sinister menace of vitriol.

The day was dying in soft airs that swept the fact of the waters with a touch so light as to be barely perceptible. With sundown fell stark calm; the Sound became a perfect mirror for the somber conflagration in the west. The slightest sounds

Greatest Sale of Building Material Ever Offered to the Public

We have the goods and must sell over $30,000 worth within the next 30 days. Lumber just like new from $6 per thousand up. Over 2,000,000 feet in stock and must be cleared away regardless of price. Second-hand doors from 25c to 50c. These doors are in good condition, some just as good as new. Windows: over 20,000 new windows of all sizes for $2.75, complete with frames. These windows are new, of all different sizes. Better windows could not be bought at any price. Chicken wire, 4-foot rolls, $2.50; 5-foot rolls, $3; 6-foot rolls, $3.75.

Plumbing outfit, consisting of bathtub, toilet, sink and washbasin, at $26.50. Roofing paper, 1-ply, $1; 2-ply, $1.25; 3-ply, $1.50. We have a very large stock of pipe and fittings at 25 per cent below others' prices. Prompt delivery, full count and entire satisfaction guaranteed.

DOLAN WRECKING AND CONSTRUCTION CO.,
1639 Market St., Opp. Franklin.

HEALD'S

Schools Located in
San Francisco, Oakland, Fresno, San Jose, Sacramento, Stockton, Chico, Reno, Nev.; Santa Cruz, Los Angeles, Riverside, Long Beach.

Write for Prospectus to the school you wish to attend.

Main Office, Post st. and Van Ness ave., San Francisco

reverberated afar through the still, moveless void. She could hear Mrs. Clover stridently counseling her Ephraim at the house, the quarter of a mile away. Later, she heard the hollow tramp of two pairs of feet, one heavy and one light, on the plank-walk; the creak of rowlocks with the dip and splash of oars; and, after a little pause, the sudden, sharp, explosive rattle of a motor exhaust, as rapid, loud and staccato as the barking of a Gatling, yet quickly hushed—almost as soon as it shattered the silences, muffled to a thick and steady drumming.

Eleanor rose and turned to look northward. The wood-lot hid from her sight both dock and mooring—and all but the gables of the hotel, as well—but she soon espied the motor-boat standing away on a straight course for the mainland; driven at a speed that seemed to her nearly incredible, a smother of foam at its stern, long purple ripples widening away from the jet of white water at the stem, a smooth, high swell of dark water pursuing as if it meant to catch up and overwhelm the boat and its occupants. These latter occupied the extremes of the little vessel: Ephraim astern, beside the motor; the slighter figure at the wheel in the bows.

Slowly the girl took her path back to the hotel, watching the boat draw away, straight and swift of flight as an arrow, momentarily dwindling and losing definite form against the deepening blue-black surface of the Sound.

Weary and despondent, she ascended the pair of steps to the kitchen porch. Mrs. Clover was busy within, washing the supper dishes. She called out a cheery greeting, to which Eleanor responded briefly but with as pleasant a tone as she could muster. She could not but distrust her companion and jailer, could not but fear that something vile and terrible lurked beneath that good-natured semblance; else why need the woman have become his creature?

"You ain't hungry again?"

"No," said Eleanor, lingering on the porch, reluctant to enter.

"Lonely?"

"No. . .."

"You needn't be; your pa'll be home by 3 o'clock, he says."

Eleanor said nothing. Abruptly a thought had entered her mind, bringing hope; something she had almost forgotten had recurred with tremendous significance.

"Tired? I'll go fix up your room soon's I'm done here, if you want to lay down again."

"No; I'm in no hurry. I—I think I'll go for another little walk round the isand."

"Help yourself," the woman called after her heartily; "I'll be busy for about half an hour, and then we can take our chairs out on the porch and watch the moon come up and have a real good, old-fashioned gossip. . ."

Eleanor lost the sound of her voice as she turned swiftly back round the house. Then she stopped, catching her breath with delight. It was true—splendidly true! The rowboat had been left behind.

It rode about twenty yards out from the end of the dock, made fast to the motor-boat mooring. The oars were in it; Ephraim had left them carelessly disposed, their blades projecting a little beyond the stern. And the water was so shallow at the mooring that the man had been able to pole in with a single oar, immersing it but half its length! An oar, she surmised, was six feet long; that argued an extreme depth of water of three feet—say at the worst three and a half. Surely she might dare to wade out, unmoor the boat and climb in—if but opportunity were granted her!

But her heart sank as she considered the odds against any such attempt. If only the night were to be dark; if only Mrs. Clover were not to wait up for her husband and her employer; if only the woman were not her superior physically, so strong that Eleanor would be like a child in her hands; if only there were not that awful threat of vitriol. . .!

Nevertheless, in the face of these frightful deterrents, she steeled her resolution. Whatever the consequences, she owed it to herself to be vigilant for her chance. She promised herself to be wakeful and watchful; possibly Mrs. Clover might nap while sitting up; and the girl had two avenues by which to leave the house—either through the kitchen, or by the front door to the disused portion of the hotel. She need only steal noiselessly along the corridor from her bedroom door and down the broad main staircase and—the front door was not even locked. She remembered distinctly that he had simply pulled it to. Still, it would be well to make certain he had not gone back later to lock it.

Strolling idly, with a casual air of utter ennui—assumed for the benefit of her jailer in event she should become inquisitive—Eleanor went round the eastern end of the building to the front. Here a broad veranda ran from wing to wing; its rotting weather-eaten floor fenced in by a dilapidated railing save where steps led up to the front door; its roof caved in at one spot, wearing a sorry look of baldness in others where whole tiers of shingles had fallen away.

Cautiously Eleanor mounted the rickety steps and crossed to the doors. To her delight, they opened readily to a turn of the knob. She stood for a trifle, hesitant, peering into the hallway now dark with evening shadow; then curiosity overbore her reluctance. There was nothing to fear; the voice of Mrs. Clover singing over her dishpan in the kitchen came clearly through the ground-floor corridor, advertising plainly her preoccupation. And Eleanor wanted desperately to know what it was that the man had hidden in the socket of the newel-post.

Shutting the door she felt her way step by step to the foot of the staircase. Happily the floor was sound; no creaking betrayed her progress—there would be none when in the dead of night she would break for freedom.

Mrs. Clover continued to sing contentedly.

Eleanor removed the knob of the post and looked down into the socket. It was dark in there; she could see nothing; so she inserted her hand and groped until her fingers closed upon a thick rough bar of metal. Removing this, she found she held a cumbersome old-fashioned iron key of curious design.

It puzzled her a little until she recalled the clang of metal that had prefaced the man's appearance in the hall that afternoon. This then, she inferred, would be the key to his private cache—the secret spot where he hid his loot between forays.

Mrs. Clover stopped singing suddenly, and the girl in panic returned the key to its hiding place, the knob to its socket.

But it had been a false alarm. In another moment the woman's voice was again upraised.

Eleanor considered, staring about her. He had come into sight from beneath the staircase. She reconnoitred stealthily in that direction, and discovered a portion of the hall fenced off by a railing and counter; evidently the erstwhile hotel office. A door stood open behind the counter. With some slight qualms she passed into the inclosure and then through the door.

She found herself in a small, stuffy, dark room. Its single window, looking northwards, was closely shuttered on the outside; only a feeble twilight filtered through the slanted slats. But there was light enough for Eleanor to recognize the contours and masses of a flat-topped desk with two pedestals of drawers, a revolving chair

In Hong Kong, Paris, or San Francisco

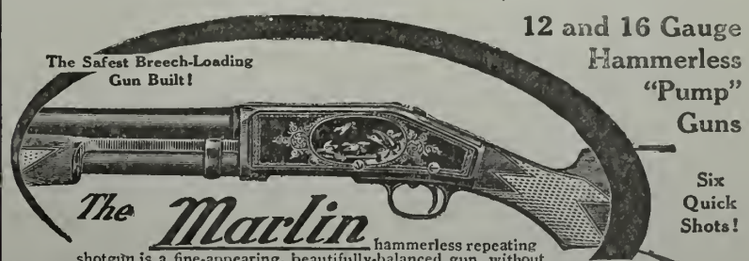
—If you ask the dealer for a good oil lamp, he will undoubtedly produce a Rayo and tell you there isn't a better lamp made.

The Rayo Lamp

is known in every civilized country of the world for its perfect lighting qualities—its safety and reliability. No glare; no flicker. Easy to light and care for.

Ask Your Dealer to Show You

Standard Oil Company
(California)
SAN FRANCISCO



hammerless repeating shotgun is a fine-appearing, beautifully-balanced gun, without any objectionable humps or bumps; no holes on top for gas to blow out through or water to get in; can't freeze up with rain, snow or sleet; its solid steel breech (not a shell of wood) permits a thoroughly symmetrical gun without sacrificing strength or safety; **it is the safest breech-loading shotgun ever built.**

It is **Hammerless** with **Solid Steel Breech** (inside as well as out)—**Solid Top—Side Ejection—Matted Barrel** (which costs $4.00 extra on other guns)—**Press Button** Cartridge Release—(to remove loaded cartridges quickly from magazine without working through action) **Double Extractors—Take-Down Feature—Trigger and Hammer Safety.** Handles rapidly; guaranteed in shooting ability: price standard **Grade "A" 12-gauge gun, $22.60; 16-gauge, $24.00.**

Send 3 stamps postage for big catalog describing all *Marlin* repeating shotguns (hammer and hammerless), all *Marlin* repeating rifles, etc. Do it now!

The Marlin Firearms Co.,
116 Willow Street, New Haven, Conn.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

with cane seat and back, a brown paper-pulp cuspidor of generous proportion and—a huge solid, antiquated iron safe; a "strong-box" of the last century's middle decades, substantial as a rock, tremendously heavy, contemptuously innocent of any such innovation as combination-dials, time-locks and the like. A single keyhole, almost large enough to admit a child's hand, and certainly calculated to admit the key in the newel-post, demonstrated that this safe depended for the security of its contents upon nothing more than its massive construction and unwieldy lock. It demonstrated something more: that its owner based his confidence upon its isolation and the loyalty of his employees, or else had satisfied himself through practical experiment that one safe was as good as another, ancient or modern, when subjected to the test of modern methods of burglary.

And (Eleanor was sure) the Cadogan collar was there; unless, of course, the man had taken it away with him; which didn't seem likely, all things considered. A great part of the immense value of the necklace resided in its perfection, in its integrity; as a whole it would be an exceedingly difficult thing to dispose of until long after the furore aroused by its disappearance had died down; broken up, its marvelously matched pearls separated and sold one by one, it would not realize a third of its worth.

And the girl would have known the truth in five minutes more (she was, in fact, already moving back toward the newel-post) had not Mrs. Clover chosen that moment to leave the kitchen and tramp noisily down the corridor.

What her business might be in that part of the house Eleanor could not imagine—unless it were connected with herself, unless she had heard some sound and was coming to investigate.

In panic terror, Eleanor turned back into the little room and crouched down behind the safe, making herself as small as possible, actually holding her breath for fear it would betray her.

Nearer came that steady, unhurried tread, and nearer. The girl thought her heart would burst with its burden of suspense. She was obliged to gasp for breath, and the noise of it rang as loudly and harsely in her hearing as the exhaust of a steam-engine. She pressed a handkerchief against her trembling lips.

Directly to the counter came the footsteps, and paused. There was the thump of something being placed upon the shelf. Then deliberately the woman turned and marched back to her quarters.

In time the girl managed to regain enough control of her nerves to enable her to rise and creep out through the office inclosure to the hall. Mrs. Clover had resumed her chanting in the kitchen; but Eleanor was in no mood to run further chances just then. She needed to get away, to find time to compose herself thoroughly. Pausing only long enough to see for herself what the woman had deposited on the counter (it was a common oil lamp, newly filled and trimmed, with a box of matches beside it: preparations, presumably, against the home-coming of the master with a fresh consignment of booty) she flitted swiftly to and through the door, closed it and ran down the steps to the honest, kindly earth.

Here she was safe. None suspected her adventure or her discovery. She quieted from her excitement, and for a long time paced slowly to and fro, pondering ways and means.

The fire ebbed from the heart of the western sky; twilight merged imperceptibly into a night extraordinarily clear and luminous with the gentle radiance of a wonderful pageant of stars. The calm held unbroken. The barking of a dog on the mainland carried, thin but sharp, across the waters. On the Sound, lights moved sedately east and west; red lights and green and white lancing the waters with long quivering blades. At times the girl heard voices of men talking at a great distance. Once a passenger steamer crept out of the west, seeming to quicken its pace as it drew abreast the island, then swept on and away like a floating palace of fairy lamps. As it passed, the strains of its string orchestra sounded softly clear through the night. Other steamers followed—half a dozen in a widely spaced procession. But no boat came near Wreck Island. If one had, Eleanor could almost have found courage to call for help. . . .

In due time Mrs. Cover hunted her up, bringing a lantern to guide her heavy footsteps.

"Lands sakes!" she cried, catching sight of the girl. "Wherever have you been all this time?"

"Just walking up and down," said Eleanor quietly.

"Thank goodness I found you," the woman panted. "Give me quite a turn, you did. I didn't know but what you might be trying some foolish idea about leaving us, like your pa said you might. One never knows when to trust you nervous prostrationists, or what you'll be up to next."

Eleanor glanced at her sharply, wondering if by any chance the woman's mind could be as guileless as her words or the bland and childish simplicity of her eyes in the lantern-light.

"Wish you'd come up on the stoop and keep me company," continued Mrs. Clover, "I'm plumb tired of sitting round all alone. Moon'll be up before long; it's a purty sight, shining on the water."

"Thank you," said Eeanor; "I'm afraid I'm too tired. It must be later than I thought. If you don't mind I'll go to my room."

"Oh, please yourself," said the woman, disappointment lending her tone an unpleasant edge. "You'll find it hot and stuffy up there, though. If you can't get comfortable, come downstairs; I'll be up till the boss gets home."

"Very well," said Eleanor.

She said good night to Mrs. Clover on the kitchen-porch and going to her room, threw herself upon the bed, dressed as she was.

For some time the woman downstairs rocked slowly on the porch, humming sonorously. The sound was infinitely soothing. Eleanor had some difficulty in keeping awake, and only managed to do so by dint of continually exciting her imagination with thoughts of the Cadogan collar in the safe, the key in the newel-post, the dory swinging at its moorings in water little more than waist-deep. . .

In spite of all this, she did as the slow hours lagged drift into a half-waking nap. How long it lasted she couldn't guess when she wakened; but it had not been too long; a glance at the dial of her wrist-watch in a slant of moonlight through the window reassured her as the flight of time. It was nearly midnight; she had three hours left, three hours leeway before the return of her persecutor.

She lay without moving, listening attentively. The house was anything but still; ghosts of forgotten footsteps haunted all its stairs and corridors; but the girl could hear no sound ascribable to human agency. Mrs. Clover no longer sang, her rocking-chair no longer creaked.

With infinite precautions she got up and slipped out of the room. Once in the hallway she did hear a noise of which she easily guessed the source; and the choiring of angels could have been no more sweet in her hearing: Mrs. Clover was snoring.

(To Be Continued).

Copyright, 1912, by Little, Brown & Co., Boston, Mass.

Among the Scenic Wonders of America

THOSE OF THE

Rocky and Sierra Mountains

STAND FORTH PRE-EMINENT

Marvelous Scenic Attractions seen from the car window without extra expense for side trips:

Pikes Peak
Royal Gorge.
Grand Canyon of the Arkansas
Collegiate Peaks
Mount Massive
Tennessee Pass
Eagle River Canyon
Canyon of the Grand River
Glenwood Springs
Castle Gate
Salt Lake City
Great Salt Lake
Glistening Beds of Salt
Mirage Land
Pilot Mountain
Grand Canyon of the Feather River

WESTERN PACIFIC
DENVER & RIO GRANDE

Illustrated booklets, descriptive of "The Scenic Route to the East," free on request.

E. L. LOMAX
Asst. Pass. Traffic Manager
San Francisco, Cal.

FRANK A. WADLEIGH
Passenger Traffic Manager
Denver, Colo.

Louisa M. Alcott's Famous Book

"Little Women"

Now published in a new PLAYERS' EDITION containing 12 illustrations from scenes in the play. Read the book and see the play.

Over One Million Copies of "Little Women" Have Already Been Sold

and this wholesome story of New England family life was never so popular as it is to-day.

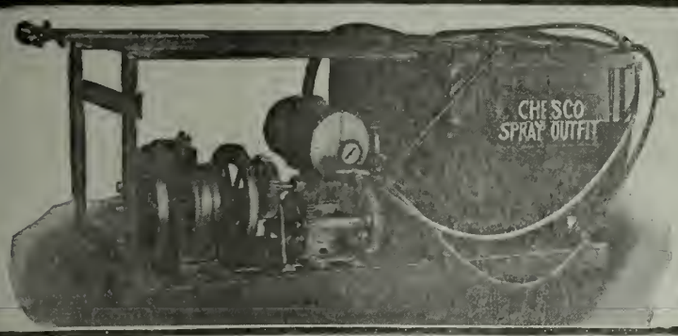
Already enshrined among the most delightful of youthful memories, "Little Women" will, in its newest form, make a wider and deeper appeal than ever.—Boston Globe.

Bound in Cloth. 617 pages.
Price, $1.50 net; by mail, $1.67

At All Booksellers or the Publishers

Little, Brown & Co., 34 Beacon St., Boston

CHESCO SPRAY PUMP



HERE'S WHAT YOU GET The most complete, economical and efficient spray outfit ever offered on the Pacific Coast **$150**

A Z-S Engine—the Engine of Power and Simplicity; all Standard Z-S Engine Fittings. A Pump—good for 200 pounds working pressure; a Covered Tank—which will hold 100 gallons of solution; 6½-inch Suction Hose with fittings and strainer; 48 feet ½-inch hose, in two pieces, with fittings for discharge lines; 2 10-ft. Bamboo Spray Poles—with complete fittings; 2 Twin Spray Nozzles—with complete fittings and extra nozzles.

The entire outfit mounted on channel iron frame, so that it can be put on running gear or on ordinary farm wagon. Mounting exceptionally light, but very strong. There is no enclosed machinery and there is ready access to pump and engine—merely remove two bolts and take off top.

A complete set of canvas curtains, which cover all machinery and parts, are furnished with the outfit.

The engine is complete in itself for pumping or other farm work, and can be taken off the channel iron foundation by merely removing four bolts. In replacing it is utterly impossible to place it back out of alignment, as there are no pipe connections to take care of.

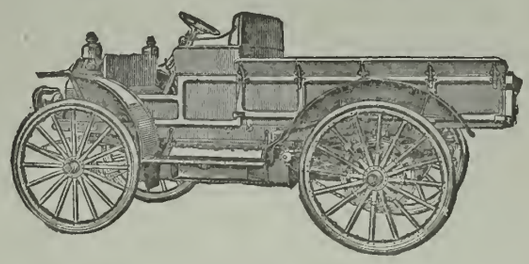
Chesco Spray Outfit Complete $150

CHESCO IRRIGATION MACHINERY

Further information on request.

California Hydraulic Engineering and Supply Co.
72 Fremont Street, San Francisco

International Harvester Motor Trucks



THE I H C LINE
GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Combination,
Peg and Spring-Tooth,
and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

"I HAVE used your International motor truck daily over a route eighty miles long, through winter and summer, for the last four years, and have never missed a trip," writes one man.

Service such as this man got would add much to the profits of your fruit business, by handling your fruits rapidly at the right moment, and cutting down your general hauling expenses. An International motor truck would give you such service. Many fruit growers, realizing the advantages and economies to be secured, have long been successfully using the light running, durable International motor truck.

The solid tires cut down tire troubles. The motor is simple and has plenty of power for emergencies. The brakes are safe on any hill. The ignition system is of the best. One lever controls the car. The International is built to save you money.

Let us show you all that an International motor truck will do for you. Drop a card today for catalogues and full information to the

International Harvester Company of America
(Incorporated)
Denver—Helena—Portland—Spokane—Salt Lake City—San Francisco
Champion Deering McCormick Milwaukee Osborne Plano

California

¶ Is a land of valleys and the advantages it offers to the farmer are dependable.

¶ Water for irrigation comes from mountain streams and a vast underflow.

¶ The climatic conditions insure larger returns per acre than is possible in less favored localities.

¶ There is also the benefit of a great variety of products.

¶ The movement of population into California is rapidly increasing.

Write to any of our agents for Map, Folders and Illustrated Literature.

Southern Pacific

FITS ANY PUMP AND MAKES IT HUMP

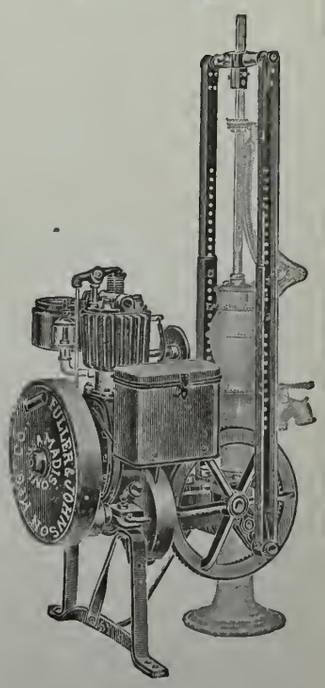
The Famous FULLER & JOHNSON Farm Pump Engine

Let the "Iron Hired Man" Do Your Work

The Farm Pump Engine, no matter what the weather, is always ready to supply at once.

270 to 2,450 Gallons of Water Per Hour All Over the World

This remarkable engine is safe—easy to operate—economical—durable—absolutely weather-proof—no belts, braces or special platforms needed. Comes ready to run. Will also operate grindstone, washing machine, separator, etc. That they are now used daily is the real evidence of their success. We want to tell you all about this remarkable engine—how it is made—what it will do for you.



Catalogs and further information cheerfully sent on request

PACIFIC HARDWARE & STEEL CO.
Pacific Coast Distributers
SAN FRANCISCO
LOS ANGELES **PORTLAND**

Indigestion Kills the Baby Chick

Indigestion causes more deaths in baby chicks than any other cause.

Their little internal organs are delicate things and require a balanced food which contains the right elements to make good blood, flesh and bone.

The right food gives them a good constitution, makes them active and gives them the ambition to exercise.

It is only by a scientific analysis and compounding that a perfect baby chick food is produced.

SPERRY'S Gritless Baby Chick Feed

is made by men who are expert in selecting the best materials and so combining them that it makes a food which is perfectly digestible.

The grains in Sperry's Gritless Baby Chick Feed are as carefully selected as those used in the manufacture of our flours and cereals.

The same care for granulation is exercised and the grains are carefully and scientifically blended, making a perfect baby chick feed.

Here are the elements in SPERRY'S GRITLESS BABY CHICK FEED:

Milo maize, Indian, Kaffir and Egyptian corn grits.
Sonora, Turkey and Chule wheat grits.
Kiln dried oat grits.
Yellow millet and hempseed.
A little charcoal.
Medium ground dry bone.
The right quantity of medium meat scraps.

All grains cracked in the cereal mill for perfect granulation and then perfectly mixed by machine.

PROFIT SAVING COUPONS

Every 50 lb. sack contains one coupon; two in every 100 lb. sack.

Fifteen of these coupons are good for one 50 lb. sack FREE—a saving of 7½ per cent on your feed bill continuously.

Sperry's Gritless Baby Chick Feed is sold in 10 lb., 25 lb., 50 lb. and 100 lb. sacks.

Your dealer carries it—if not notify us and we will tell you where you can get it.

SEND FOR OUR BOOKLET

It contains valuable information about raising chicks and has pointers and suggestions which will prove of great help to you.

Free samples and the booklet are yours for the asking. Address

Stock and Poultry Food Department.

Sperry Flour Company
Stockton, California.

Stock & Poultry Food Department,
Sperry Flour Co.
Stockton, Cal.
Gentlemen:
Without obligation on my part, please send me your booklet on feeding chicks and the free coupons.

Name _____

Address _____

_____

TEAR OFF AND MAIL O.F.

MORSE'S Garden Guide for 1914

mailed free of charge to any address.

If you are in doubt as to how to go about planting your flower garden: if you want valuable information as to the best and most profitable vegetables to plant and how best to raise them, you will want this book. It is clearly and interestingly written and contains many beautiful and life-like illustrations. Write for it now, today.

"the finest seeds in the world"

That's what an enthusiastic customer wrote us not long ago. And if the care, time and money used in their selection count for anything, they really are. We are always on the lookout for the new and beautiful in flowers, plants and trees, and for the hardiest, most profitable and most delicious in vegetables. We are the largest seed house on the Pacific Coast. Headquarters for **alfalfa, grasses, clovers, etc.**

Correspondence Invited.

C. C. MORSE & CO.
48 Jackson Street
San Francisco

CALIFORNIA STATE

ORCHARD and FARM

HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888
IRRIGATION

STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 3 Published by Country Life Publishing Co. March, 1914 Hearst Building, San Francisco, Cal. $1.00 a Year

"Old Tranquility," the Champion of the Pacific Coast Dorsets.

How Home Mixing Makes European Farmers Prosperous

They buy straight materials and mix them into balanced fertilizers containing two or three times as much

Nitrate of Soda

as high-priced American complete fertilizers contain. Your fertilizer should contain 4% of active nitrogen. Does it?

On land farmed for centuries, England raises 33 bushels of wheat per acre. We raise but 14. Europe imports 100% active Nitrate of Soda. You use dried blood, tankage only 60% to 70% active and you pay more for it.

"Home Mixing" is a book to help you increase your yields. Send your address to me on a postal card.

DR. WM. S. MYERS
Director Chilean Nitrate Propaganda
23 Madison Ave. New York
No Branch Offices.

Potash | Nitrate of Soda | Super-Phosphate

Write for Free Catalog

Send Only 75c And We Ship You This Superb ROCKER

Only 75c down and then 50c per month and we ship you this magnificent rocker—$4.95 in all for this handsome piece of furniture. Write for free catalog to-day. You can see for yourself what an elegant rocker this is. It is made of high-grade solid oak, profusely carved. A large, roomy, comfortable, well made Rocker, with high, wide back, fully tufted and buttoned. Upholstered with high-grade black Boston leather. Seat is made over full steel springs, has beautiful ruffled edge. Order No. 0F3501. This Rocker is only one of our special bargains.

MONTHLY PAYMENTS

The great house of M.Friedman & Co. with a proud quarter-century record, endorsed by the greatest bank, will trust you and allow you to buy any article on easiest monthly payments. If you want anything in rockers, chairs, bedsteads, carpets, rugs, curtains, refrigerators, crockery, silverware, baby carriages, go-carts, stoves, ranges, or any other article of house-furnishing, don't fail to get our sensational easy terms.

FREE New Big Money Saving Catalog

Don't wait a minute before sending for our great bargain catalog. Bargains which are positively astounding.

Write To-Day—Don't Wait

Send a postal or letter—but send right now. Just your name and address on a postal or letter and we will mail free and postpaid our catalog.

M. FRIEDMAN & CO.,
261 Post Street, San Francisco.

CONTENTS FOR MARCH, 1914

Page

FRUIT VARIETIES FOR DIFFERENT SECTIONS 1
Horticultural experts of the most important fruit section from Siskiyou to San Diego tell of the importance of selecting varieties best adapted to certain localities.

THE FRESNO TRACTOR DEMONSTRATION 2
A story of the demonstration and its lessons.

VARYING FEATURES OF TRACTORS 3
An outline of special features of the tractors at the demonstration.

TRACTORS IN THE SACRAMENTO VALLEY 4
Announcement of a great demonstration of these efficient farm power machines to be held this month at Marysville.

THE VALUE OF HUMUS IN THE SOIL 4
George Wright gives some valuable points about soil management.

CROP CONDITIONS ALL OVER CALIFORNIA 5
Reports of the County Horticultural Commissioners on all crops up to the last week in February.

HOW THE MORRIS COWS MADE BIG RECORDS 6
D. J. Whitney explains the methods used by this successful dairyman and stock breeder.

INTENSIFIED DRAFT HORSE BREEDING 7
W. M. Carruthers, one of California's foremost livestock experts, tells of the importance of "Class" in stock breeding.

A WORD FOR THE COTSWOLD 9
Value of this breed on the farms of the Pacific Coast.

THE AYRSHIRE A DAIRY COW 11
C. M. Winslow, secretary of the Ayrshire Breeders' Association, tells why he prefers this breed.

LIVESTOCK PROGRESS IN 1913 13
Development of the industry during the past year.

RIGHT AGRICULTURAL POLICIES IN CALIFORNIA 15
Orchard and Farm gives a glimpse into the future of Agriculture in this State.

POINTERS ON TREE PLANTING 16
Some valuable suggestions on planting the orchard.

PROBLEMS OF THE FARMER 18
Answers to questions asked by our readers.

HARVESTING AND MARKETING BERRIES 19
M. J. Moniz, manager of the Barlow Ranch, tells how to get the best results from this crop.

HOW TO GROW SWEET PEAS 20
Some practical information for florists.

FUNDAMENTALS OF ALFALFA GROWING 21
Practical suggestions on growing this most profitable forage plant.

POTATOES FOR PROFIT 22
Ernest A. Marris tells how to plant and care for this crop to get the best results.

OFFICIAL REPORT ON RURAL CREDITS 23
The American Commission on Rural Credits submits plans whereby farmers can secure money for farm improvements.

FACTS ABOUT CHINESE EGGS 25
Poultrymen have little to fear from the importation of this product from the Orient.

HOUSEHOLD DEPARTMENT

CONTROL OF TEMPERATURE WHEN COOKING 28
Mary B. Vail, head of the Department of Home Economics in Mills College, gives some advice about cooking.

THE HOUSEHOLD EXCHANGE 29
Handsome Prizes awarded to winners in contest for suggestions for house work.

USEFUL AND UP-TO-DATE PATTERNS 30
The latest in things to wear.

HINTS FOR THE SEWING ROOM 31
Valuable suggestion for those handy with the needle.

A FARM HOME SEWER SYSTEM 32
Dennis H. Stoval gives suggestion on preserving the health of the home.

THE BAND BOX 33
The fascinating mystery story by Louis Joseph Vance.

To Be Sold by

PUBLIC AUCTION

At the Union Stock Yards, Portland, Oregon,

THURSDAY March 26, 1914

60 Head of Registered SHORTHORN CATTLE

from the herds of Minor, Brown, Dunn and Cornett, consisting of 40 bulls and 20 females. Included in the number are sons and daughters of the great bull, Golden Goods. Grandsons of the grand champion bull Avondale. Also sons and daughters of the two grand champion bulls of the Pacific Coast, Scottish Star and Imperial Victor.

Catalogues ready March 1. Apply to

A. D. DUNN,
Wapato, Wash.

EVERYTHING FOR THE BUILDER

Bargains in Building Material

We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.

Carload Lots a Specialty

H. McKEVITT & SON
1849 Mission St.
Near 14th St. San Francisco.

ORCHARD AND FARM
IRRIGATION

Vol. XXVI MARCH, 1914 No. 3

Fruit Varieties for Different Sections

EXCEPTING the matter of orchard work and marketing, nothing in fruit growing is more important than the proper choice of tree varieties for a ocation. In fact this is the starting point of success or failure, and more fail-res have perhaps resulted from planting trees in the wrong place than in any ther way. What follows is designed to prevent such occurrences and to act s a guide for prospect-ve planters in getting he right trees for the ight place.

The data in prepar-ng this was secured rom horticultural au-horities in the leading ections of California, nostly horticultural com-nissioners, who reported ot only what varieties f trees were being lanted this season, but lso those that they con-idered worthy of careful rial and probably of high aluc for their districts. Not every county was alled upon for data, as ne county in the upper Sacramento valley, for nstance, can act as a uide to others to some xtent, and one foothill ounty for another.

Utilizing Surplus Creek Water in a Santa Clara Prune Orchard.

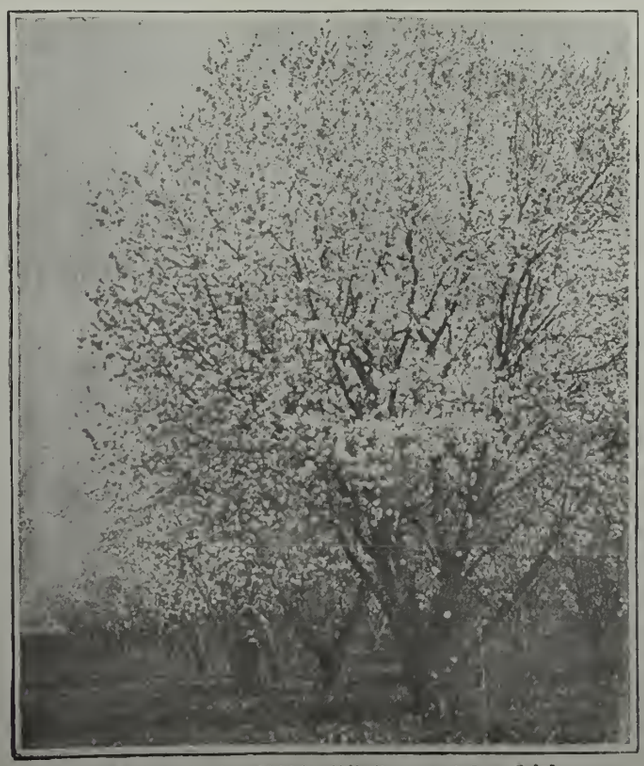
Apples, the world's greatest fruit, has not been in great favor the last year or two, although quite a bit of planting is being done in widely separated sec-ions. Jonathan is the favorite variety in Humboldt county. For the Sierra oothill counties J. E. Hassler strongly advises apple planting, though little is eing done there. In higher elevations of southern California counties this ruit is apparently more popular than else-where. In San Diego county Delicious, Jon-athan, Stamen Winesap and Rome Beauty re favorites. San Bernardino is planting he same, with the addition of Rhode Island Greening, W. W. Pearmain, Arkansas Black nd early varieties.

Pears are going into the locations where apples will do well, but seem to be very popular, Bartlett being the universal favorite. Humboldt likes it, so do the apple districts of the south. Even Imperial county is plant-ing some experimentally. El Dorado and similar counties are planting heavily. One man near Vina, in Tehama county, is plant-ing 2,000 acres. Bartletts are also being planted in our coast and bay counties, where good locations are found.

Walnuts furnish a striking feature, and appear to have broken away from the mo-nopoly of the southern coast counties, though heavy planting there is still the rule with the Placentia the leading variety. Hum-boldt county reports walnuts as getting most attention of all fruits this season. The Sierra valley foothills likewise report walnuts as arousing great interest experimentally, and the same thing is reported from many points on the floor of the great interior valley, in some parts of which walnut growing is now considered very profitable. The Franquette, Mayette and Eureka are the popular varie-ties away from the southern coast. In the south the latter is also looked upon with favor. An interesting feature also of new planting is the popularity of the prune in other than the bay counties, long considered the leading section for them. Butte county reports 90 per cent of the planting in valley districts to be French prunes, and all through the Sacramento valley they are near the lead, though not always leading other fruits. In the southern San Joaquin, Tulare and Kings counties, some prune planting is also being done, with Robe de Sergent the leading variety. In bay and coast counties the prune meets as much favor as ever.

Owing to the short crop last year, almonds are not in the favor that they were the season or so before, though the outlook is better than ever, if anything, and a big crop is sure to make a big demand for nurs-ery stock again. Even so, almonds are one of the fruits most in de-mand now. The Hatch varieties (Nonpariel) and Ne Plus Ultra and sometimes I. X. L.) are the leaders, usually being accompanied by Texas Prolific and Drakes Seedling. Contra Costa reports much almond planting; so does Tehama, Yolo, Butte and other Sacramento valley counties.

Peaches have had a black eye the past year, but it is interesting to note that the acreage is developing moderately. A good many are being put out in various parts of our great central valley. Most southern California counties also re-port some peach planting. In San Diego it is Elberta, Salway, J. H. Hale, Carmen, Foster and Early Crawford; in the interior, the standard drying and canning varieties, and in Imperial county varieties seldom considered in the rest of the State. South-ern peach planting, outside of Imperial, is largely for use without shipping great dis-tances. Quite a few peach orchards are be-ing taken out in some California counties, which improves the market prospects else-where.



In well-drained orchards alfalfa proves beneficial.

Plums are holding their own, keeping a steady progress. El Dorado county reports Gros Prune and Grand Duke most in de-mand, San Diego the Satsuma and Burbank, San Bernardino the Green Gage and Yellow Egg. The plum varieties are so numerous that detailed knowledge of local conditions is required and a general summary like this must be very incomplete, or misleading, if it attempts to be complete.

A good deal of apricot planting is stated to be in progress from the southern coast counties and some from other places, espe-cially bay and coast counties. Royal is a big leader, though other varieties share at-tention where shipping is done. Blenheim leads in the bay counties.

Cherry land is so well taken up in Cali-

(Continued on Page 36)

The Fresno Tractor Demonstration

JUST one thing prevented the great tractor demonstration at Fresno from being one of the greatest agricultural meetings ever held in California—that is the rain. Since rain means money for the California farmer to buy tractors to raise better crops, the hindrance from the rain can be looked upon without dissatisfaction. Rain put the ground in bad shape before the demonstration was scheduled to start and put a stop to most of the program after it had started, giving a visitor the idea "If the assemblage of tractors could be so instructive in bad weather, what would it have been with everything pleasant?"

From one standpoint the rain made the gathering more of a demonstration than it otherwise would have been, for it showed what some of the tractors could do in tight places. If everything had been lovely a skeptical investigator might say: "They work all right when conditions are good, but they have not proved their worth when things go all wrong, as they sometimes do."

After seeing the performance of some of the machines in the worst situations, not a person there but had as high an opinion of the capacity of the modern tractor as it would be possible to have.

The interest that was shown in the demonstration was up to the best expectation and proved that all over California farmers are awake to the benefits of modern machines and methods. Prospective investors in tractors came entirely for the demonstration from as far distant as Mendocino county and southern California, to say nothing of those from all over central California. Weather conditions made many others telegraph—about prospects before leaving home. Considering the rain, the attendance was excellent in numbers and in localities represented.

The nature of the soil was such as to make the rain cause as much trouble as it could. The demonstration was scheduled to be held a number of miles north of Fresno on the Bullard tract. This is not the sandy loam that is found over much of Fresno county and which would not have been especially troublesome if it were a little too wet, but it was that red sandy clay formation called "hog wallow." Although an electric line ran past the tract, the machines were unloaded from the cars on the main steam line at Herndon, about four miles off, and had a long stretch of muddy road to travel over.

Although the rainfall was not heavy enough at first to prevent tractor work, it made the surface so sloppy that no farmer would think of plowing under such conditions, and except for a little plowing and cultivating, most of the demonstrations had to be of the tractors running by themselves. Even if plowing had been done under the conditions, it would have stirred up the ground so as to make it impossible for spectators to have gotten around to see anything.

There is enough clay in that kind of soil to make it awfully sticky and disagreeable if it is taken in just the wrong condition and the uneven surface made it worse for tractor work. The result was that the water drained to the low spots and when a tractor hit a low place it was likely to find the soil a regular mush. It was easy to get stuck with a gang plow or a disc harrow in such a spot and in trying to get out for a tractor to dig a hole for itself. Thus one of the most realistic demonstrations was to see the way to work a tractor out of hole. From a standpoint of "demonstration," the power that was displayed by some of the machines was one of the most convincing things that could have been given, unplanned and undesired as it was. Without much doubt, a number of persons were more pleased with the tractors on the way they got out of difficulties than they would be if everything had been smooth sailing.

As a matter of fact, however, the soil was in such condition that the majority of the machines did not give themselves the opportunity to get stuck, and there was practically no plowing or cultivating done.

Even so, it will be worth while to outline the programme for a regular demonstration, so that a person can know what to expect at the Marysville demonstration, if weather permits that to be held, or at some other similar demonstration.

In the first place, there is nothing in the way of competition at such a demonstration. Each machine is supposed to have its own special merits and adaptability for special conditions, so each tractor can pick out what plows or cultivators it wants to use, what fuel it is to burn, and so on, doing the work that will best suit prospective customers.

At this demonstration F. L. Peterson of the division of farm mechanics at the University Farm, Davis, Cal., had been secured to see that whatever specifications were made were carried out. For example, if a machine was supposed to burn a certain grade of oil, Professor Peterson was there when the fuel was put into the tank to see that it was of just the standard that was called for. Thus the visitor at the demonstration would know that the conditions for fuel and otherwise were exactly those used on regular farm work.

Likewise definite arrangements were made for the plowing. A field was surveyed into ten-acre strips (or strips of any convenient size), and all the tractors of a certain class, large field type, or small orchard type, would set off plowing at one time, so that the onlookers could see them working under similar conditions. They could plow as much or as little as they wanted to, so as to fit the size of the machine, take all the time, or as little time as they wanted, but by having them work in this way it would be more instructive to the onlooker by far than to have a big machine working one place and a small machine near it, and another machine, or machines, working somewhere else without reference to the operations of the rest in time or position. For the orchard work parts of an orchard are used, in place of the open field for the big tractors.

According to this programme, one-half day would be given to big machines and one-half day to small ones. Then on the other days and half days the machines could work on unsurveyed fields for the benefit of spectators who wished to make personal and definite investigations. According to this system, a person could see all types working together and separately, at regular work and special work, and know that with fuel and otherwise the machines were working as nearly as possible under field methods.

All this is "might have been" for the Fresno demonstration. The attendants only saw a fine assortment of machines and plows, cultivators and other soil disturbers that the tractors handled. The wide differences between them was a big thing by itself and seeing the machines get along under the worst of conditions was also worth more in some ways than ordinary plowing and cultivation under perfect conditions could be.

Record in Tractor Plowing.

In line with the tractor demonstrations held by "Orchard and Farm," it is worth while to note that the greatest plowing performance in the world was made last year in California in the preparation of land by the Solano Irrigated Farms Co. In this 10 caterpillar tractors traveled on together, each pulling a gang of ten Oliver plows, each plow turning over 14 inches of soil, which made a total of 1,400 inches of soil in one operation, or a strip of land over 116 feet wide. At the rate of travel this fixed up an acre in two minutes. Behind this came two tractors drawing 100 feet of harrows and along with the outfit went another tractor with the camp wagon.

The field contained 7,000 acres, so unless the camp wagon did go along the outfit would go hungry, for it was too long between turns. When noon or evening came the caravan just stopped for eating or camping and started up when starting time came. There was no connection here between the different tractors, each going along independently, though working in harmony with the others, and although a record for one plowing, it was not the record of a single joined operation.

The greatest single and united effort in plowing was only half as great as this, but resulted in an acre being turned over every four and a quarter minutes. This was conducted by Purdue University, Indiana. There were 50 bottoms connected in this case and pulled by three Rumley Oil Pulls. Oliver plows were used in this case, as in the California achievement. Four men, including three engineers and a plowman, handled the outfit, while in the old-fashioned way, with three horses to a sulky plow, it would have taken 150 horses and 50 men to do the work.

Get Chicks Early

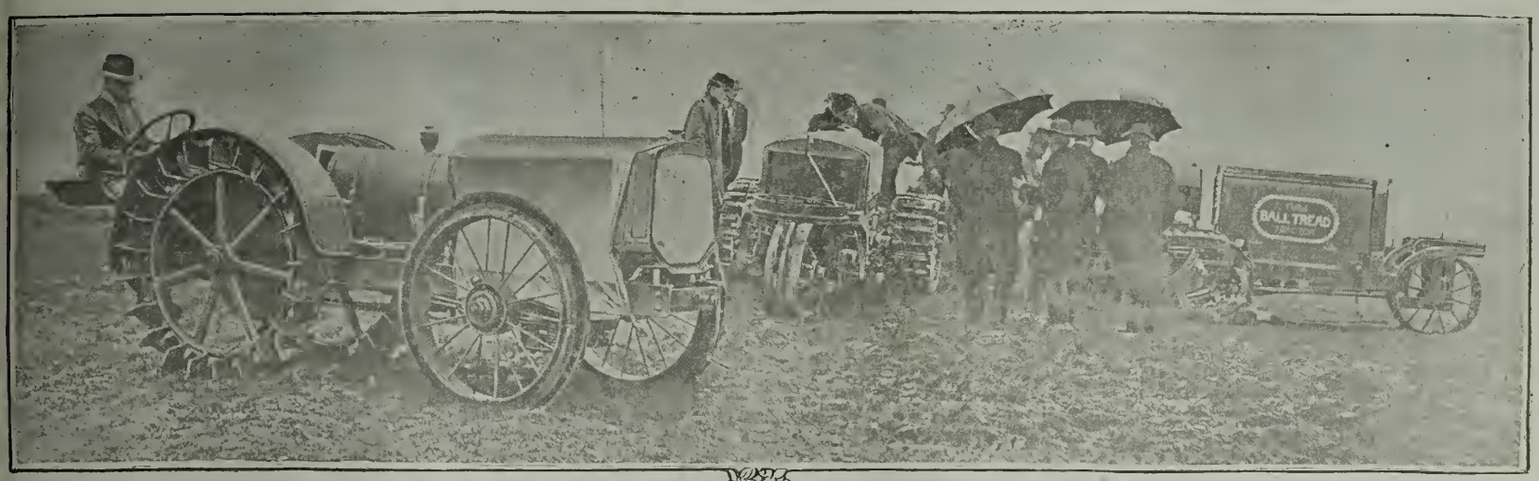
On the tenth of May last I bought 200 day old chicks. The poultryman said: "I guarantee them to start laying at six months." At six months old they were moved to new quarters. Eight months old and not one egg from any of them.

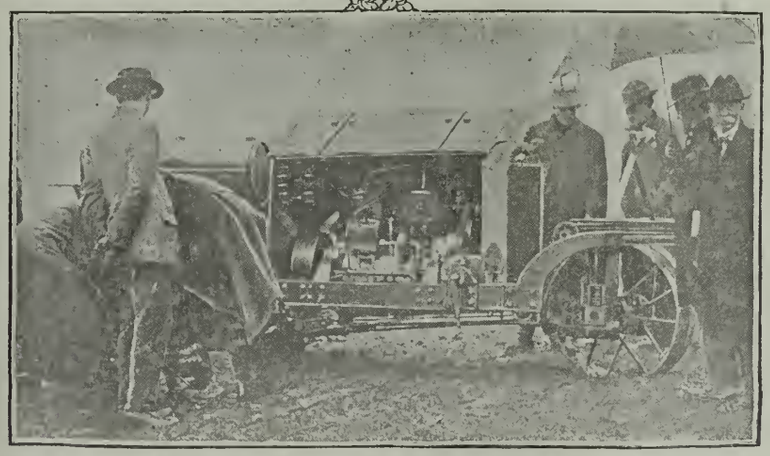
Moral: Get your chicks before May and you stand a better chance of getting winter eggs.

I had an outdoor brooder and several of the little fellows were chilled. I took good care of them and they looked all right again, but only for a few days. Don't let them chill.

Keep just as many sheep as the grass will stand and that you can rightly manage.

Features of the Tractors





EVERYBODY knows that gas tractors can pull, and pull hard; and a tractor demonstration that would only show that tractors could pull would not show anything that everybody did not know already. The great point of a demonstration is the bringing out of the definite points for which each tractor was built, its special advantages for special work. A person can then go to a demonstration and find anything he wants: large field tractors and orchard tractors; round-wheel tractors and tractors laying their own track; tractors with one particular feature in their favor, and tractors with another attractive feature.

Although the only way to get full advantage of a demonstration is to go to see it, the following is just a brief outline of the leading features of the different machines at the Fresno demonstration, as an ordinary person would see them—not a person already so far along that a demonstration was unnecessary.

There were at the Fresno demonstration between a dozen and twenty machines, the great majority differing so from one another that there was hardly a family resemblance. Tractor manufacture has passed the stage of building machines merely to haul weight over the ground, but manufacturers have developed special features that, being seen, indicate the great list of services that tractors can be. To exhibit these features was in certain respects the leading cause of the demonstration.

There were present at Fresno several types of machines; the original type of big wheel, heavy, powerful tractor; the tractors that lay their own track, moving on a belt, and the small orchard tractors, which included both round wheel and belt traveling tractors. In a class by itself was the Hackney, so different in design from the others that it can hardly be put in the same classification with any. Some of the leading features of the individual machines displayed follow:

The two Holt caterpillers, 75 and 30 horsepower, have been known too long to require much description, as detailed descriptions have already been read, probably by all interested. Improvements have been found advisable only in details.

The 70-horsepower track-layer of the C. L. Best Company came in for attention through several special features. One feature emphasized is that, whether turning or going ahead, both tracks pull the same. Another feature of the track that the manufacturers specially speak of is the frictionless rocker joint, which prevents were when that track is in motion.

The Yuba Construction Company's two machines, which likewise are of the type traveling on a belt, were much smaller than the tractors just named. One of these weighs 7,600 and the other 8,900 pounds, having 20 and 30 horsepower capacity on the drawbar. The track of the smaller has a bearing surface of 32 inches. The larger machine has a bearing surface of 44 inches. Extensions on the track make it possible to use these machines in rice harvesting on water-soaked adobe. The muddy field at Fresno apparently did not bother them greatly. One track can reverse while the other is going ahead, thus letting the machine turn in its own tracks. Both use distillate.

One of the talking features of the big-wheel Rumleys is the fact that they burn stove distillate, or a low-grade and inexpensive fuel oil. Another thing is that the engines are oil-cooled, which is a great thing in hot summers, where rapid evaporation exhausts water in water coolers and makes it unnecessary in the oil cooler to supply water for cooling the engine. One of the Rumley tractors is 30 and the other 60 horsepower.

The Fairbanks-Morse tractor present also burned low-grade oil, which makes the cost of operation small. This machine is very heavily built and durable, so that cheapness of upkeep accompanies cheapness of fuel. Efficiency and durability is one of the leading talking points.

As was stated earlier, the orchard tractors from their varying features were more interesting in some ways than the big machines, there also being more of them. With the exception of the small machine of the Yuba Construction Company, all shown were of round-wheel type, and all likewise had some features of the wheels which enabled them to get a grip on the soil and to leave it in good condition. Lightness and small size, to let them get close to the trees easily, were the leading features of all.

The Samson Sieve Grip was represented by two machines owned by ranchers of the county, both same model. The striking point of this was indicated in its name, the surface of the wheel being made so as to get a good grip, the soil also being left stirred behind the wheels. The latter feature is one of the things that the manufacturers state especially pleases the orchardist. For road work a band can be slipped over the wheel to provide a smooth, hard surface. The Samson was one machine that got in a bog at the demonstration and made lots of friends the way the engine pulled it out.

The Lambert Steel Hoof tractor came over the roads to the demonstration from Exeter, where it had been doing orchard work, finishing the journey over bad roads at a speed of twelve miles an hour. Although possibly the leading feature of this machine is the "steel hoof," the road work is one of the leading features also. There is an adjustment by which the "hoofs" fold back, letting the wheels rest on solid rubber tires. In this way it can go over hard roads pulling heavy loads. Naturally, in orchard work the speeds are low, as is usual, as is the case if heavy loads are to be drawn at road work.

Although the "Toe Hold" of the Rumley orchard tractor is one of the leading features, its small size, compactness and efficiency made as much of a feature as the feature from which it takes its name.

The Golden Gate tractor, which was at the demonstration, was the first of one made by the Golden Gate Tractor Company of Berkeley. It has the front of a high frame automobile and the rear of an orchard tractor. The traction comes on the rear wheels, the tread of which is made to get a grip on soft ground. The high front wheels are the guide in steering, as turning is done with them and not, as in nearly all other tractors, by the traction wheels. This is the leading feature of this tractor, it being claimed that this gives simplicity and efficiency by having fewer working parts.

The Hackney plow, as was said, is the one that was in a class by itself, differing radically from all other types. In this the plow is a part of the machine, which is built high, somewhat on the lines of an auto truck. The merits claimed for the type are that it develops a large horsepower (20 to 25 in this case at the draw-bar), with very small weight.

It will be clearly understood that the few points given above are a small fraction of the number of good things that might be said about all. To state the merits of each with due justice would fill the paper, and what good things have been said have no relation to the good things left unsaid. The features have to be seen to be appreciated. All the machines showed great excellence of design and workmanship and efficiency, and proved the satisfaction that would be given to farmers on all types of land and with all kinds of work to do.

There were present also a fine assortment of plows, cultivators and soil tillage implements, of which space forbids description. However, in such a demonstration the tools for the tractors to haul prove in certain respects as profitable, if not more profitable, for investigation as do the tractors themselves.

Among the implement companies with tools on the ground were: Benecia Iron Works, with disc plow for tractor work, especially in orchards; also crosskill roller; Holt Manufacturing Company, with Davis gang plow; Killifer Manufacturing Company, with sub-soiler and heavy-duty orchard cultivator; and Light-Draft Harrow Company, with Forkner light-draft orchard cultivator.

The thanks of all exhibitors are due to the Union Company, which provided oil free for the tractors in order to assist in making the demonstration a success. The Southern Pacific Railroad likewise deserves special thanks for the interest taken in providing facilities in transporting and unloading the tractors and in other kindnesses.

The possibilities of such a demonstration proved so great that it has practically been decided to hold the Marysville demonstration only if the weather before and at the time is such as to have the ground in excellent condition and to bring out the largest crowd. If not, the demonstration will probably be postponed until some time during the summer, when the weather will surely be good and half the State can attend.

Tractors in Sacramento Valley

THE one and only condition that could arise to mar the success of the tractor demonstration at Fresno February 19, 20 and 21 was rain in such voluminous quantity as to make the ground impossible for footing for either man, beast or traction machine. Such was the condition that did arise, and for that reason alone the Fresno meeting fell short of its previously assured interest and value. Surely the rain only can be blamed. The manufacturers of traction engines, the plow and cultivator men were there in greater number than expected. Facilities for reaching the scene of the demonstration were well provided. Keen State-wide interest was developed and every controlled detail was arranged and settled, but J. Pluvius upset the entire scene—and did it pretty thoroughly.

Therefore, on account of the splendid opportunity nipped by the rain at Fresno it has been deemed advisable to postpone temporarily the tractor demonstration announced for Marysville, March 5, 6 and 7, the postponement being desired only so that the weather and soil conditions will be in favor of both exhibitors and spectators, instead of o pposed to both. Since the California season of 1914 has thus far been extremely erratic and uncertain, it cannot be said with absolute certainty at this date just what the new dates will be, but it is safe to say April will be the month.

The April issue of "Orchard and Farm" will announce the exact dates and other complete information. For this reason subscribers should disregard announcements made in our February issue naming the March dates for the Marysville demonstration. On the other hand, the April "Orchard and Farm" will give all the new details, dates, programmes, etc., of the delayed demonstrations.

It will probably be the largest and most diversified tractor demonstration ever held. During the three days at Marysville particular attention will be given to the orchard and vineyard tractors. Orchards and vineyards aggregating over fifty acres and presenting almost every phase of tillage operations have been set aside for these demonstrations, and manufacturers will have every opportunity to display the efficiency of their machines. Adjoining the orchards and vineyards is a large tract of land, some of which has not yet felt the plow, and there the big, heavy and powerful tractors will be exhibited.

This land is in Sutter county and is easily reached from both Marysville and Yuba City. Every arrangement will be made on the grounds for the comfort of the visitors.

The Southern Pacific and the Western Pacific railways will offer special rates for the three days of the demonstrations from all Sacramento valley points.

These exhibitions are to be purely demonstrations and not contests. There will be no prizes or blue ribbons or awards. The manufacturers will simply show the efficiency of their machines in farm operations and the farmer will be there to judge which will be best suited for his individual needs.

These demonstrations will be conducted under the direction of a committee composed of representative farmers of the Sacramento valley, and associated with them will be Professor F. L. Peterson, head of the department of farm mechanics of the University of California and a representative of "Orchard and Farm." It will be the duty of this committee to see that the demonstrations are carried out in all fairness to the manufacturer and the interested farmers.

As at Fresno, all of the tractors will operate in the fields as in actual farm operations. In addition to the tractors there will be various types of plows and cultivating implements designed for use with traction engines, and a farmer will be able to form an opinion as to the efficiency of this type of power in farm work.

The age of power farming has arrived. Up to almost the present time the horse has been the most efficient power in farm operations, but the gas engine is now taking the place of the faithful animal in tilling the soil. The farm is like a factory. The more efficient the power the more efficient the farm or the factory. Farmers are realizing this more and more every day, and the interest in the new power was manifest every day at the Fresno meeting by the thousands of questions that the demonstrators of the machines were called upon to answer. It was a busy time for them and the farmers of the San Joaquin valley now know more about the tractor than the farmers of any other section of the Pacific Coast. It will be the turn of the farmers of Sacramento valley to see the many types of these machines at work in the same field and at the same time during three days of the first week of this month.

There is much to learn about a tractor. While the machines are simple there are many types, and it is the types and the particular aptitude of each type for the work required that interests most modern farmers. There are countless factors to be taken into consideration in the selection of a tractor. One should satisfy himself as to the investment; the efficiency in various particulars; the question of fuel supply; the cost of maintenance during work and during idleness; the attendance required; the concentration of power; the speed; effect upon the soil; the range of usefulness; the endurance and the many phases of every one of these essential requirements. All of these were demonstrated at the Fresno meeting and all will be again shown at the meeting at Marysville.

The Cost of Waste

A man who accumulated millions in the manufacture of mustard, said that it was not the mustard that was eaten which paid a profit, but that which was left on the plate. Thus the wasteful habits of the many, made the fortune of the few.

It is always the waste that costs, and particularly is this true of farm machinery. The millionaire head of the Harvester Trust said that if the government had used half the zeal in preaching better care and housing of farm machinery, that it had in investigating the manufacture of mowing machines, and the farmer had heeded the sermons, the trust would long since have been put out of business, because it was not the machines actually worn out in use, but the machines thrown out from neglect or abuse, that caused the profits of the manufacturer to grow. Almost all farm machinery is as much damaged by neglect or exposure to the weather when not in use, as it is by wear when in actual use.

Clean Feed for Horses

Don't feed dirty grain to your horses. The dust, weed seeds and other foreign matter in the grain is disagreeable to the animals and is injurious.

Use a sieve to measure the grain, and give it a few shakes to allow the dirt and seeds to fall out before feeding. Some pour water over the grain in the sieve, or dip the sieve of grain in a bucket or tub of water a few times. This is a good plan as it removes all dust and smut. The feed boxes are kept cleaner by treating the grain in this way before feeding.

The Value of Humus in the Soil

By George Wright

THE most vital thing in California agriculture to-day is the maintenance and increase of the humus supply in the soil. The meaning of the word humus is decayed vegetable matter. Agricultural chemistry calls it organic matter. Soil is composed of two principal elements, mineral matter and humus. We have all no ticed how readily newly cleared for est ground or new prairie ground re sponds to a crop. This is because the land is rich in humus. After a time, because of constant cropping, the humus is worn out of the soil, and it becomes barren in a measure, and particularly it fails to grow a crop in a drought. The farmer has gone along year after year taking off crops, and he has not resupplied the soil with decayed vegetable matter or humus.

The retaining humus in the soil is important in the matter of holding moisture, for if the rain falls upon clear earth, be it heavy or light, the water which falls upon it very soon evaporates again and leaves crops to suffer, whereas if the land is filled with vegetable fiber of a spongy nature it will collect and hold the rain that falls so that crops will develop even through quite a drought. While it is always the best practice to secure a good growth of some leguminous crop, as peas, vetches or cowpeas, to be turned under while still green in the soil, yet it must be recognized that when the soil has once gotten into a poor physical condition, it is often practically impossible to induce the legumes to make a satisfactory growth upon the land. This is usually because the soil is already so devoid of humus that it will not retain moisture enough to start a crop of clover and possibly will not grow a good crop of weeds. In this case, then, what is to be done? If a supply of coarse manure was at hand that would fix it, if plowed in, but commercial fertilizers on such depleted soils are not considered of any use, as water will not remain long enough in the soil to act upon them.

In this dilemma one must turn from the legumes to some rapid-growing crop to secure this organic matter and stimulate its growth as much as possible by a complete commercial fertilizer. One of the most favorable crops to me for this purpose in California is rye. This makes rapid, vigorous growth during the winter and is ready to be turned under in the early spring. To secure efficient results along this line the crop must be plowed under very deeply. The ground may then be fallowed for the summer and seeded the following fall. After two or three treatments of this kind it will be found that in localities of twenty inches of rainfall or more the continuance of a bare fallow will become unnecessary.

A favorable mixture to encourage the growth of the rye is as follows:

	Pounds.
Fine ground bone	150
Superphosphate	600
Muriate or sulphate of potash	250

Such a fertilizer will analyze about as follows:

	Percentage.
Nitrogen	0.5
Available phosphoric acid	8.0
Total phosphoric acid	11.0
Potash	12.5

This material may be applied at the rate of about 500 pounds per acre with satisfactory results upon the clovers, cow-peas, alfalfa, vetches or pasture grasses. It will be noted that the fertilizer carries a minimum of the very expensive element, nitrogen, because these crops gather the necessary amount of this element from the air, and their root system, ultimately plowed under, becomes a fertilizer for the land.

This, then, is a question which must have more of our attention than it has had, if we are to maintain our farms in a condition to withstand drouth and carry our crops through successfully. All the weeds, sticks and rubbish of every kind we can plow in or work into the soil; all the fresh manure, straw or other substances should be utilized, and in the absence of, or in connection with these, we should study this greatest need on our farms. Grow clover if we can, and if we cannot, then take up the next best thing. There will have to be a waking up all along this line and farmers will have to be brought to realize that as much or more value in the manure is in the condition in which it puts their land to retain moisture, as in the fertility it contains.

Soudan Grass

Experiments that have been made in the Victor valley with Soudan grass, during the past year, seem to indicate that a better forage crop than alfalfa for regions having scant rainfall has been discovered.

From seed which was obtained through the Department of Agriculture Soudan grass more than eight feet high was grown on King ranch, northwest of Victorville, during the past year.

The crop was not harvested, because it was needed for seed, but after the seed was gathered some of the grass was offered to the ranch horses and they ate it in preference to alfalfa. The stalks grow to a height of eight or ten feet in a single season, on less moisture than is required by alfalfa, and it would therefore seem that Soudan grass may eventually prove profitable as a forage crop where there is intense solar heat and scarcity of water.

Some Fine Percherons

A large consignment of Percheron horses, direct from France to McLaughlin Brothers, arrived in Oakland during the last week in February. Included in this importation were several prominent prize winners at the leading shows in France. Nearly every horse in the lot is coming three years old. They were exhibited at the stockyards at Chicago on the way across the continent, and horsemen there said they had never seen such great weight in stallions of the age. These animals will effect a great improvement in the heavy draught stock on the coast.

Breeding for Profit

The principles to be followed by farmers in improving their horse stock are: The use of sound, purebred sires of a particular breed, the use of sound mares, the feeding and care of the mare and foal and the working of the stallions regularly. Dr. Alexander of the Wisconsin Experiment Station further urges the home production of pure-bred stallions to replace the grades, mongrels and scrubs too often used at present.

He urges that grade horses replace scrubs in farm teams. The organization of community associations will greatly facilitate the promotion of horse-breeding and the encouragement of the industry may be furthered by prizes at county fairs for pure-bred stallions, mares and colts.

Clean Dropping Boards

Unless a dropping board is cleaned regularly and treated for vermin, better not have one in the summer time. They furnish an excellent place for lice to multiply if neglected.

Crop Conditions All Over California

COLUSA COUNTY, G. R. Roedfeld—The recent clear weather has allowed the farmers to do lots of seeding. All the grain is looking fine. It is a little early to say anything about deciduous fruits.

CONTRA COSTA COUNTY, Frank T. Swett—The rainfall has been bountiful and the soil is well supplied with deep and also surface moisture, and the pastures are rich and green with grass. Fruit buds look well on all trees and everything promises a good season if no accidents intervene. Owing to ravages of phylloxera, a considerable acreage of vines is being uprooted. A few are replanting their vineyards with resistant stock. Few berries are grown in this county, but as the lands are being subdivided there will be a material increase in the berry acreage, as some land is well adapted to the various kinds. ting is about to start on the vast asparagus farms of the eastern end of the county. It is reported that nearly 1,000 cars of celery left the county this past winter. Barley, oats and wheat never looked better. There is a considerable carryover of old hay still in warehouses, now being offered at lower prices than were obtainable some months ago. A large acreage of pears, French prunes and almonds has been planted this season by experienced orchardists and by new settlers who find their opportunities in the subdivision of the large holdings now on the market.

HUMBOLDT COUNTY, Geo. B. Weatherby—All varieties of deciduous fruits are looking well, and many of the growers are preparing to spray to control scab and aphis troubles. These are the most pronounced troubles.

IMPERIAL COUNTY, F. W. Waite—Canteloupes are up, and indications are that shipments will be made about thirty days earlier than last season. Early peaches are in bloom. Indications are for a good crop of apricots. Prospects are good for a heavy crop of barley. Stock is in good condition.

LOS ANGELES COUNTY, Wm. Wood—The rains in this section could hardly have been better. Nearly all have come gently, so that it has penetrated the soil, and all become available. The accumulation of snow on the mountains insures us a fair supply of water. We confidently expect more rain in the course of the winter, and altogether our prospects for crops of all kinds are excellent Citrus fruit is growing in size and quality. There will be fully an average crop of oranges and 40 per cent of an average crop of lemons. Prospects are much above the average for grain, and with fair late rains we should have a bumper crop. The acreage also is decidedly larger than common. Livestock is in good condition and has plenty of feed.

KINGS COUNTY, B. V. Sharpe—The ground is in fine condition for all crops, and prospects are very fine. Fruit buds are abundant and healthy.

MONTEREY COUNTY, J. B. Hickman — Fruit buds in excellent condition. Vegetables are backward because of heavy rains in January and some frosts. Many fields of grain in the hill sections will need resowing, but in the valleys generally the grain is looking well.

MENDOCINO COUNTY, J. R. Banks—We have had a very pleasant winter. The indications are good for crops and livestock, and the grass on the ranges is fine. Conditions are favorable for a good grape crop. That of last year was 3,500 tons. There were 4,000 tons of hay sold last year, besides home consumption. Vegetable prospects are good. Last year's crop was 150 tons.

NEVADA COUNTY, D. F. Norton—I think I have never seen apple, pear, peach and plum trees so full of fruit buds as they are at the present time. We should have an enormous crop this coming summer. Citrus fruits are all harvested and sold. The trees are in fine condition; not a twig has been touched with frost so far. Vegetables are being taken up and ground is being prepared for spring planting. February is the critical month with stock, but the warm rains have solved the problem, and livestock is more than holding its own, as the young grass has a good start. The abundant warm rains have brought grain along in fine shape. It never looked better at this time of year. Tree planting is going on on all sides. The heaviest plantings are to the south and west of Grass Valley. Over a thousand acres are now ready for the trees. I am inspecting from 1,500 to 2,000 daily. Bartlett pear leads, peach second, apple third and plum fourth. A large acreage is being cleared of brush, but a great deal of this will not be ready for planting before April. A great many walnuts and filberts are being planted this season

SACRAMENTO COUNTY, F. R. M. Bloomer—Many new settlers are arriving. The majority are buying land and improving it by planting various kinds of trees. Planting of trees is going on rapidly, over 150,000 having been inspected. Fruit buds on orchards are in fine condition and spraying with lime sulphur is progressing. Grape pruning is nearly done. Very few grapes will be planted this year, probably 300 acres. The planting of new fields of strawberries is just beginning, and berry vines are looking well. Grape fruit is being shipped from Fair Oaks and Orangevale. There will be a large planting of Washington Navels. Cauliflower, cabbage, lettuce and radishes are being marketed in large quantities daily. Asparagus is doing nicely. The grain acreage is larger than usual and looking up to standard. Livestock is in fine shape, as pasture is plentiful.

SAN BERNARDINO COUNTY, S. A. Pease—It is too early to give any definite crop prospects, but will say that we have had good rains, followed by good weather, which makes the outlook at present date as nearly perfect as possible for all kinds of fruits and grains.

SAN DIEGO COUNTY, H. A. Weinland—The planting of deciduous trees is rapidly progressing in the valley sections. The apple and peach are predominating. The citrus fruit situation is satisfactory, considering all conditions of market and frost. The shock of last winter seems to have increased the yield of all those trees that were only slightly injured. The grain is looking the finest possible, and the prospects are good for a bumper crop, as more than the usual acreage has been planted. The whole county is busy organizing farm bureaus to co-operate with the county farm adviser soon to be named for this county. Great things are looked for from this organization of ranchers in many ways.

SAN JOAQUIN COUNTY, William Garden—The prospects for the coming season in this county, so far as the fruit crop is concerned, are very good. The fruit buds are well developed and there are plenty of them. This is so for all varieties of fruit trees in this county. If the late frost does not injure the blossoms we have every reason to believe that we will have a very heavy crop. Grain crops in this county are looking very lne.

SANTA CRUZ COUNTY, W. H. Volck—Prospects are good on all varieties of deciduous fruits. Prospects are good for berries in general, but there has been considerable damage by floods. The condition of grain in general is good, but there has been too much water in some cases.

SHASTA COUNTY, Geo. A. Lamiman—All varieties of fruits are looking well at this date. Cool nights are holding back the buds, and I expect a normal blossoming season. Shipments of trees are very heavy this month, over 40,000 trees and vines having been inspected by the middle of February. Many early shipping peaches and also canning varieties are being planted. Planting is done on new orchard land—that is, it is not resetting. All the grain is looking well. Much late sown grain is being planted this month. The creamery output is increasing nicely, the month of January being the heaviest output since the opening of the creamery.

STANISLAUS COUNTY, A. L. Rutherford — Crop conditions of all kinds are good. There are over 10,000 tons of last year's alfalfa hay in the hands of the growers and warehouse companies, with the new crop growing very rapidly.

VENTURA COUNTY, R. S. Vaile—Exceptionally favorable conditions for all agriculture continued in February. If the weather remains warm apricot and almond crops should be large. The orange crop is moving slowly. Although slightly below normal in yield, it is of fine quality. Lemons are up to normal in yield, or slightly above Sugar beets are well out of the ground, and much of the thinning is finished. All grain has been planted, and much of it is making a fine growth. With a few showers between now and the end of April, all crops should give heavy yields. We have a very large district, several thousand acres in extent, in the Pleasant Valley Camarillo section of the county, which is just being opened up as a walnut and lemon district. In the next few years I expect to see large numbers of these trees planted here. Considerable of our land in the Piru-Buckhorn district, which has been thought worthless, is being cleared up, water is being developed for it and it is being planted in citrus fruits and apricots.

YUBA COUNTY, G. W. Harney—Horticulturally speaking, conditions are normal. During February weather has been ideal for finishing farm and orchard work, especially spraying of deciduous trees. A large acreage is being planted to peaches prunes, berries and grain.

THE Crop Reports from the County Horticultural Commissioners throughout California during February almost without exception show that in practically every way crops are in as good condition as could well be desired. Buds are reported to be both abundant and vigorous and the moisture plentiful enough to do full justice to the coming crop. Clear weather has let the farmer catch up with his work, so that full advantage has been taken of abundant moisture. The grain and hay acreage is large and condition fine. Pasture is abundant for stock and the latter in the best of shape. Development is rapid everywhere, as the individual reports will show.

Spraying Overcomes Walnut Troubles

EXPERIMENTS conducted by University of California scientists indicate that spraying methods have been found that will largely overcome the aphis and partly overcome the blight, the two greatest walnut problems in California, thus putting the industry on an even finer footing than it is to-day. Full details are given in a recent University of California circular and the following only gives the leading facts, for this is the time of year that work should be undertaken.

Walnuts produce marvelously in our southern coast counties. A number of years ago the blight began to do great damage and gave production a severe set-back. More recently the aphis has been exceptionally bad until it does probably even more damage than the blight. Experiments, a number of years ago, indicated that control by spraying was unlikely, but the increased perfection of spraying apparatus caused renewed work to be undertaken last winter and spring with excellent results.

The fundamental point is to have power sprayers that can reach all parts of the trees and the spraying must be done thoroughly enough to cover all twigs. The spraying must also be done while the trees are dormant, say in February and March, for the mixture will kill soft growth. The best work was done with the following mixture: Commercial lime-sulphur solution, 5 gallons; quicklime, 25 pounds; water, 95 gallons. At the rate of 25 gallons per tree the total cost of application was 45 cents, while 40 gallons per tree cost 72 cents, so it is seen that any substantial check in blight or aphis would more than justify the treatment.

Results for blight were indefinite, as the blight was not bad last year on unsprayed trees, though there appeared to be at least some blight control by the lime-sulphur spraying. There is also some experience to indicate that continued spraying with the lime sulphur for two or three seasons gradually decreases the amount of blight.

Results were marked on the aphis. This insect spreads the blight and multiplies its infections by carrying the germ as it crawls about the trees. Further, it reduces the vitality of the tree, checks its growth, reduces the size and weight of the nuts and contributes to the occurence of "perforation," "stick-tights" and other conditions which decrease the crop and increase the cost of handling the nuts. Well sprayed trees remained comparatively free of aphis long after the insect had become abundant on unsprayed trees. The nuts of sprayed trees were larger and cleaner.

How the Morris Cows Made Big Records

THE Holstein herd of A. W. Morris and Sons, Woodland, is noted throughout California dairy circles. Two thousand pound cows with world's records in milk productions have made it so, to say nothing of other achievements. A few weeks ago a third cow, Pet Salambo, of Riverside, completed a year's record of 22,287.8 pounds of milk and 802.2 pounds of fat, or 1002.53 pounds of butter.

As there are only 18 or 20 Holstein cows that have made their thousand pounds of butter in a year, although there are quite a few of the greatest breeders that have never put their cows through the yearly tests, this shows that A W Morris and his sons have accomplished great things.

Furthermore, the work has just begun in earnest, for the herd was started only five years ago, while other great herds are long-established, and there are at least two other cows well along in the yearly test which will quite surely make their thousand pounds nicely, a good number of young cows who will do better than the older ones soon, and these three great performances are but typical of what is being done with all the herd.

For example, ignoring several world's records for short tests, there had been completed by February 5th, 1914, forty-nine yearly tests, of which only fifteen were by mature cows, and the average record was 16,604.8 pounds of milk and 561.62 pounds of fat. The best 15 records averaged 20,147.1 pounds of milk and 703.46 pounds of fat.

Aralia De Kol, when over 12 years of age, gave 28,900 pounds of milk and 1,142.32 pounds of butter (80 per cent) in a year, and Riverside Sadie De Kol Burke 28,826.6 pounds of milk and 1,085.13 pounds of butter. What is equally important in proving the soundness of the dairy methods here, both cows have daughters which promise better things than their dams.

Although the fact that the above has been done is interesting, the great point for the California dairyman is to know what sort of methods brought it about. California deserves a big slice of the credit of such achievements and the Morris family credit for doing their possibilities aright. The methods they use are fundamentally the methods that every grade dairyman in the alfalfa districts should use, only detailed attention that the grade dairyman could not give is naturally applied also.

Everything here has been accomplished with nothing more than brains and stability and a willingness to work. When A. W. Morris started dairying he had no money at all and any good dairyman in California has exactly as good a chance as he had, saving only that land values have gone up greatly.

Mr. Morris began dairying for himself 20 years ago with a herd of grade or native cows, but acquired also a fine Holstein bull. By careful culling and breeding he had five years ago one of the finest herds of high producing grade Holsteins in California and was looking for an opportunity to secure a bunch of purebreds.

His first purebreds were the cream of the famous Pierce herd from San Joaquin county. When that was dispersed, Walter Gammon, a friend of Pierce, and a neighbor of Morris, purchased several of the best cows and heifers, but feed being scarce, he sold them all to Morris. There were eight or ten milking cows, quite a bunch of heifers and a number of young bulls. Although much Eastern stock has since been purchased, mostly young, these cattle made the foundation of the herd and all three of his thousand pound cows were in the original bunch. The last of the grade cows were disposed of to or three years ago and there are now on hand about 300 head of purebred stock of all ages and both sexes. The equipment is, with few changes, just what was used for the old herd, but a modern equipment is being established several miles north toward Knights Landing, where the soil is remarkably rich and the land higher and better drained.

Lorena Korndyke, a grand champion and one of the leaders of the great Morris herd.

Now for the actual methods. Put in a nutshell, the greatest single point is to give the cows the most liberal feed and care possible and then to see that they give all possible in return. This has not only made great individual records, but it has developed strength and vitality, and showed itself well in breeding. The cow doing the best to-day and promising the greatest results is on her third yearly official test, did the best she could in her first two tests, and is getting better all the time.

Feeding is the great thing, and alfalfa, of course, is the foundation. Milking cows are fed green alfalfa from racks in corrals and when there is no green alfalfa, corn silage is fed to provide plenty succulent food. To supplement alfalfa, both for chemical composition and for its better utilization beets have always been fed, whole beets when available, otherwise moistened and beet pulp. In theory this is admirable; in practice likewise.

This year two silos were erected and corn silage fed, 40 pounds per day. The Morrises are enthusiastic over it, for results and for the moderate expense of money or labor. Corn will take the place of some of the beets, but not all. For example, from three to six pounds of beet pulp is fed per cow per day as well as the silage.

A notable feature is that with these feeds, which are the easiest of all for California dairymen to produce and which form an ideally balanced ration, less milled feeds are fed to their best cows when doing their best than Eastern scientists and authorities advise being fed to grade cows for commercial work. Get that? We will say it again. It is less expensive in California to feed the best cows living in proportion to milk given, than to feed ordinary cows in the East the way authorities advise. For example, authorities advise a pound of grain to every four pounds of milk. This proportion is never fed here on the Morris dairy. Good cows get six pounds per day, the best never more than 20 pounds, and all give much more than the milk that so many pounds of grain, according to Eastern standards, would justify. Alfalfa, with beets and corn silage, is so good that more grain would be an excess The grain is two pounds of ground wheat to one of ground barley, with some bran.

It has been found that the cows are in much better condition while milking their best and getting plenty beet pulp and silage with some grain, than when milking only two-thirds or three-fourths as heavily on alfalfa hay alone. Financially and physically good feeding is profitable.

The cows are also fed to build them up as well as possible while dry. The plan of letting the dry cow rustle for herself don't go here. Feed is cut down to dry a cow, if she will dry, and the rule is to give a cow six weeks' or two months' rest before freshening When fully dry, she has good pasture and good feed until a day or two before calving and comes fresh in the best condition.

The calves are also fed as well as can be and are kept growing to the limit all the time, the feeding being of such a nature as to promote growth and vigor rather than merely fat. Results have justified this treatment from breeding and in the growth of calves, too Heifers normally are improvements on their dams. In common with other California breeders it has been found that California-raised calves, through mild climate and excellent food, are considerably larger than Eastern raised animals. In other words, California has natural advantages that put her in the lead in dairying the quality and possibilities of dairy cows.

The herd is too young to say much about breeding results, more than has been said. The first herd bulls were part of the original Pierce lot and owing to the money and care Pierce put into his herd they were of the best of the breed. As these bulls became older, their heifers increased in number, and new blood was introduced by purchase. Other bulls were secured from the East. Of these King Segis Pontiac Emperor was Grand Champion at the 1912 California State Fair and Lorena Korndyke, whose likeness appears herewith, was the same in 1913. A third bull, Prince Gelsche Waker, has given fine looking calves, though heifers of none of these bulls have been fresh yet to give the final test. Breeding is done from choice blood lines from the herd also, particularly from bulls out of Aralia and Riverside Sadie De Kol.

Cows are bred to bulls that apparently will nick best with them. Likewise breeding is done with best regard for blood lines. Thirdly, when a cow is of exceptional merit she is bred, unless there is a reason for the contrary, to the bull of most exceptional individual merit, whose dams have made the best records and who has the best blood lines generally Thus the cows of the future have scientific breeding from best ancestry, climate and feeds to develop strength and vigor, and a treatment of their immediate ancestors that instills the milking habit.

Cows inherit, first from the sum total of their ancestors, secondly from the indivdual merits and habits of their parents. With California climate and feed and the right development a California-raised heifer has the advantage, as results have shown here, over East-heifers. Besides when out of California cows, individually meritorious and properly developed, they have an advantage in immediate ancestors that Eastern cows cannot have.

The real instructive feature of the Morris herd is something that fits the business of the grade dairyman as it does that of the purebred; when you have cows with good possibilities, generous feeding of the right material gives results far beyond the fondest dreams of a generation ago. Such feeding is profitable for any dairyman with good cows; at the best it is far simpler and less expensive than just ordinary feeding of ordinary cows in less favored States than California.

Horses and the Farm

Never salt the horses's feed in the box. Place a big lump where he can reach it and he will take it when he needs it.

It costs a good deal of money to buy a satisfactory team In most cases this can be avoided by the farmer raising his own.

Never whip a balky horse. Sell him if you can't manage him and let the other fellow match his temper against that of the horse.

The tillage, the crops and the income from the farm are all more or less dependent upon the economical management of the work teams.

Have you ever noticed that the first thing your horse does when you turn him out of the stable in the morning is to go straight to the watering trough?

Getting What You Want

If you breed the mares to strong, vigorous sires, that is the sort of offspring you may expect; if you breed to the other sort you may expect some other sort of an offspring.

In feeding an orphan colt the first milk drawn from the cow is better, as it is not so rich and therefore more like the mare's milk.

Intensified Draft Horse Breeding

By W. M. Carruthers

GO where you will in this State, the subject of intensive livestock farming seems to be uppermost in the minds of all those who evince any interest whatever in the agricultural devlopment of California. This article, which will be the first of a series, will deal with intensified draft horse breeding on the small farms in this State. No farm can get along, and do the work properly, without the use of the draft horse. "He may have reached his zenith, but he has still a long afternoon."

There are two distinct classes of draft horses which can be grown successfully on any of our high-priced lands in California; namely, draft horses weighing around 1,400 pounds and those 1,800 pounds and over.

The draft horses first mentioned are now used exclusively by the express companies and are being bought at the ages of three to four years old. These horses are supposed to be halter broken only and to have never had a harness on, as these companies have their own men to do the breaking. The other draft horses are the only horses which the big draying companies will purchase for their work on the streets. Color should really make no material difference in the buying or selling of horses, but it seems that blacks and bays are the preference in the large cities on the Pacific Coast. In fact, the Standard Oil Company will not buy horses unless they are blacks or bays. The Wells Fargo Express Co., that is in the market for the 1,400 draft horses, have in the past been buying grays, but of late years they also have been turning to the blacks and bays. There are no better draft horses on earth than good dapple grays, if they are rightly built, but as one of the leading draymen of this city remarked, "Gray horses usually change their color every two years."

In beginning the breeding of draft horses as a business on the farm the first great essential to be considered is the buying of the mares to do the work on the farm. The lighter weight mares should be of the same type and build as the heavier weight mares, as there is really only one build for good draft horses. Chunks will never be high-priced horses, therefore in selecting light weight mares, height should never be overlooked. The writer has never believed in cross breeding, but to secure the type of horses that the market demands at the present day, it is necessary to cross breed.

The British bred mares crossed by the Percheron horses, or vice versa, will usually give the desired result. The Shire horses have the disposition, contour, bone and quality, perhaps lacking a little in length of stiffle and depth of rib, on which two points the Percheron horses are usually very strong.

In choosing brood mares for foundation stock on the farm, long couplings, narrowness of conformation, straight pasterns and low-hecled feet must be strictly avoided. Mares with very light bone should be left for some other man to handle. Splints do not matter much in young horses. The legs should be smooth and clean from the knees and hocks down to the hoofs. The hoofs should be of fine texture without ridges, cracks or breaks.

In purchasing a stallion see that whatever promises the seller makes are made before the bargain is closed and made in writing. Verbal promises and representations cannot be made binding, but have been the cause of tremendous losses to confiding stallion buyers. If a guarantee of anything is to go with a horse get it in good terms; the plainer and more definite the better. Always secure the pedigrees at the time of sale, with a definite guarantee that the horse is actually the one named in the certificate. Mistakes have occurred in this particular. A guarantee of this kind holds the seller either to make the horse fit the certificate or the certificate fit the horse, and leaves him in a bad place if he can do neither. Most reputable firms prefer to treat the customer liberally and keep him satisfied, on the ground that a pleased customer is a good advertisement. Before buying the stallion all the points in constitution, confirmation and soundness should be considered the same as with the mare.

Shire mares at work on Salvador Stock Farm, Napa.

As with the breeding stallion, so it is with the brood mare, it is best to work her whenever possible. A mare that is worked intelligently, not pulled hard, properly fed and well housed, will usually carry her colt right up to the foaling period. Any good food free from dust will serve her purpose well, if she is given enough of it.

If the development of the colts is to be the best, they should have about all the grain they will eat, and their mothers should also be well fed. If the mares are worked regularly their feeding need not bother anyone. The colts should have oatmeal and bran, a little at a time at first (after they are three weeks old). The supply should be renewed often, so as to keep it in front of the colts always fresh and sweet. It is not always a good thing to turn out on grass at night horses that are working regularly, whether they are mares, nursing colts or other work horses. It is much better to be one thing or other, work and dry rations only, or grass and idleness. The two will not mix to advantage. If horses are to do a proper amount of hard work they require a good deal of hay and grain, and the fill of grass they get in the pastures between dark and sunrise serves no good purpose. It is better to keep them in the stable and let them rest in peace. If they must be idle, reduce their grain rations. When the colts get old enough they may eat grass if they want, and also grain, but their milk should always be the same, therefore let the feeding of the mares be uniform.

As to the growth of the colts; if properly reared they will make more than one-half their growth the first year. This rule will, of course, be more or less upset in abnormal cases. Colts may be badly treated during their first year, and then given good care during the next three years, but they will never have the size which they should have had if they had been handled right and kept growing from the start. The larger the ultimate size is to be, the greater proportion of it will be made the first year. The draft-bred colts that do not weigh 1,200 pounds the day they are a year old, will have a slim chance of being first-class draft horses at maturity. The best plan to keep colts growing is to give them all the grain that they will clean up nicely and let it go at that. It is a very poor practice to let colts get thin in flesh. It is even worse to let them loose the natural flesh they had when they were born. It is just as bad to let them get thin after they are weaned. Loss in weight and flesh at any of these times will never again be regained.

The breaking of colts should begin when they are a few days old. The little fellows are then usually friendly and like to be petted and played with. If they are halter broken, taught to lead, and allowed to gain confidence in man when they are a few months old, half of the battle of breaking is over.

There is no set rule for breaking horses to harness. The man who breaks horses usually finds new conditions to deal with in each one he undertakes to break.

Good harness is one of the best advertisements a farmer or breeder can have. It is economy to buy good leather and keep it in good condition. The harness from the bridle to the crupper should fit neither too tight nor too loose. It is worth dollars to the farmer to have the harness fit just right. The horse will work more contentedly and move more freely. The farmer's business needs advertising just as much as the merchant's. No one need think that the packers and other great mercantile houses go to tremendous expense for fine horses and harness for nothing.

As a rule, the financial prosperity of any farmer may be gauged by the equipment and appearance of his teams.

Shire mare. A good animal on any farm.

When we put blinds on the bridle of the nervous horse we only add fuel to the flames.

Never tie a mule in a stall over night. The open field for him always.

Barren Cows Are Not Profitable Cows

Barrenness in cows can be cured. Hundreds of cows are sold to the butcher at their meat value, when sensible treatment would make them pay big dividends on their *milk* value. The milk producer is the only kind of cow worth having—and a barren cow cannot permanently be a good milk producer.

If you have a barren cow, buy a 50c package of KOW-KURE, the great cow medicine. KOW-KURE works on the genital organs, toning them up and making them perform their proper functions. KOW-KURE is also an unfailing cure for such troubles as Abortion, Retained Afterbirth, Bunches, Milk Fever, Scouring, Red Water and Lost Appetite.

Ask your neighbor about KOW-KURE. Sold by most feed dealers and druggists in 50c and $1 packages. Send for valuable free treatise. "Cow Diseases."

Dairy Association Co., Mfrs.
Lyndonville, Vt.

Distributors for Pacific Coast:
Germain Seed & Plant Co., Los Angeles, Cal.
Portland Seed Co., Portland, Oregon.
Spokane Seed Co., Spokane, Wash.

KOW-KURE

Two O.I.C. Hogs Weigh 2806 lbs.

Why lose profits breeding and feeding scrub hogs. Two of our O. I. C. Hogs weighed 2806 lbs. Will ship you sample pair of these famous hogs on time and give agency to first applicant. We are originators, most extensive breeders and shippers of thoroughbred hogs in the world.

U. S. Govt. Inspected Herd

Write for Free Book, "The Hog from Birth to Sale."

FREE—One 15-oz. can of our celebrated Silver Live Stock Powder for free trial. Send for it today.

THE L. B. SILVER CO.
1538 Vickers Building Cleveland, Ohio
Established 1863—50 Years' Success

BLACK LEG LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials. 10-dose pkge. Blackleg Pills $1.00 50-dose pkge. Blackleg Pills 4.00 Cutter's Blackleg Pill Injector 1.50

Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. ct. Use any injector, but Cutter's simplest and strongest. Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (ours or any other), as it affords less protection than fresh. Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly. THE CUTTER LABORATORY, Berkeley, California.

FREE Wholesale Catalogue of everything for farm and home. Engines, Pumps, Fence, Wagons, Harness, Furniture, Groceries, etc. The Old Hickory Supply Co., Inc. Dept. 5, 85 Second St., San Francisco.

Wool Grades

THE scientists who for years have been building the dairy herds of this country to a higher plane of efficiency have now decided to assist the wool men to better their conditions. As long as the protective tariff was in force the wool men of this country made no effort to branch out and compete with free trade wool-growing countries to secure recognition in the open markets of the world.

Since Congress removed the tariff entirely from wool it leaves the wool men of this country up against some very hard problems, which they must solve. Science has come to the rescue and is about to go to work to help solve these knotty problems.

In this country there is no system in the way we handle wool. The business is in a terrible state. Shearing is done improperly by irresponsible shearers. The wool is tramped down in sacks, so that the fleeces can never be properly separated. The fleeces are kicked together by the sacker, who is usually a hobo with heavy boots. There is no organization, no standardization, no system.

In Australia the shearing, grading and baling are done entirely by contract. The contractor takes charge of the sheep when the owner drives them into the pens, and does all the work. The owner does not touch the wool; there is a complete organization to handle it. There sheep are sheared properly; the fleeces graded by experts and baled right there where the work is being done. When the wool comes out of the hands of the contractor it is ready for use. The government has established standard grades, which the buyer must accept. Here the buyer is the arbiter and can reject as many fleeces as he chooses. There is no one to stand between the buyer and the seller and decide upon the grades of wool.

In London the marketing cost is 1 per cent for the maximum. In Australia it is 1¼ per cent for the maximum. For larger quantities the marketing cost is even less. In the United States the selling cost is 10 per cent. Think of the waste. In London and in Australia the wool is graded when it comes to the market. The manufacturers send their buyers into the auction market and they know just how many pounds of yarn and of what grade can be made out of a bale of wool offered for sale. The producer therefore sells at these auctions to the manufacturer direct; the auction broker gets a commission of 1 per cent for conducting the transactions.

At the meeting of the National Wool Growers' Association, held at Salt Lake City last month, Mr. Cosgriff announced that he had at his own expense and with the assistance of T. W. Boyer engaged W. T. Rich, an expert on the Australian system of grading, packing and marketing wool, to teach the wool growers of the United States this system, for a period of one year. He announced that Mr. Rich would arrive in March to begin his work, and would be ready to furnish experts from Australia to help the wool growers and to teach them the system, which, he declared, would put the American wool growers on an equal footing with the Australian grower in the open market.

When this system gets into full operation it is believed that the protective tariff, which has always been a bugaboo to the American wool grower, will be forgotten forever and never again be discussed on the floors of Congress.

Sheep are such sensitive creatures that little things in care and feed make for success or failure no matter what the breed

Black Hawk Stock Ranch

For Sale—**SHIRE STALLIONS**, ranging from two years up. Also **MARES** in foal. Breeding and quality unsurpassed. Prices right and inspection invited. Correspondence given prompt attention.

Address

A. W. WARD

Burlingame, Cal.

Mammoth Consignment Sale OF

Registered Jerseys

BY CALIFORNIA BREEDERS.

On G. O. Hillier's Jersey Farm

MODESTO, CAL., on APRIL 2

96 HEAD SEVERAL REGISTER OF MERIT COWS **96 HEAD**

A magnificent offering of some of the best individuals and blood lines on the Coast. Over 70 head of females. All stock sold under a WRITTEN GUARANTEE of soundness, etc. Write G. O. Hillier, Sales Manager, for handsome illustrated catalog.

Consignors: G. O. Hillier, Modesto | W. A. Bradley | J. N. Lester, Corcoran | R. L. Waltz

Auctioneers: B. A. Rhoades, Los Angeles. J. A. Corley, Modesto.

America's Leading Horse Importers

PERCHERONS

A Famous Prize Winner. One of Our Recent Importations.

Our recent importation arrived at our Oakland Stables December 13. At the International Live Stock Exposition, Chicago, December, 1913, our stallions won two gold medals, two championship ribbons, two second prize ribbons. There were over 600 Percherons exhibited at this great show.

IF YOU WANT THE BEST, LET US HEAR FROM YOU.

McLAUGHLIN PERCHERON COMPANY

Kansas City, Mo. Oakland, Cal.

A Word for the Cotswold

THE Cotswold sheep pictured in the photographs on this page are very true to type, and should be considered the very best the breed has produced. These sheep were bred and raised in the State of Oregon, in the great Willamette valley, which is considered by many the home of the Cotswolds in this country.

Cotswold ram and ewe. Champions at the last Oregon State Fair.

At the Pan-American Exposition held in Seattle a few years ago the Oregon Cotswolds in competition in the open to the world classes, carried off the lion's share of the prizes. The year following F. W. Harding of Waukesha, Wis., the largest importer of Cotswolds in the United States, crossed the continent and purchased in Oregon his show flocks for that year. These flocks were shown at nearly every State fair in the Middle West and the East, and proved to be winners at every show.

The demand for these sheep seems to be growing all the time. Recently the United States Government tried to purchase from 400 to 600 Cotswold rams on the Coast to ship to their Indian lands in New Mexico and Arizona. After considerable investigation and hunting for these sheep, the Government was forced to take another kind, as the Cotswolds had all been sold to go to other parts and none were left to fill this order. Sheep breeders of Idaho and Utah buy Cotswold rams out of Oregon by the trainload.

There are many counties in California, especially in the north and along the coast, where Cotswolds could be bred and raised just as well as in the State of Oregon. Last year several South American republics purchased Cotswolds through their governments. All the Cotswolds going to these republics had to be shipped from the port of San Francisco, after having been expressed from Oregon to this point. As there is only one flock of this breed of sheep of any size in California, and that in Tehama county, it seems that the opportunity is ripe for some of our breeders to branch out in the breeding of Cotswolds.

Livestock for the Big Exposition

I. D. GRAHAM, assistant chief of the livestock department, has just returned from Denver, where he accomplished much good livestock work for the Panama-Pacific Exposition. The work begun with the American Shorthorn Breeders' Association, for a large appropriation and also to maintain view herds of their breed during the entire ten months of the exposition, was fully discussed by all concerned and final decision settled.

The executive board of the American Shorthorn Breeders' Association has engaged Carl Kinzer, a brother of R. J. Kinzer, secretary of the American Hereford Association, to be their representative in the Western field and devote his time to the interest of the breed in the country west of Denver. They also decided, at a meeting held in Denver, to give $5,000 for Panama-Pacific special prizes, and if the Panama Exposition would increase their premiums to $7,500, that their association would raise their special premiums from $500 to $7,500, making $15,000 in all hung up for prizes for shorthorn cattle at the Panama-Pacific Exposition. At this meeting the association also decided to pay all the expenses of their view herds while they were on exhibit at San Francisco, provided the Western shorthorn breeders would either buy or put their own cattle on exhibition.

The American Percheron Horse Breeders' Association, at a recent executive meeting, decided to give $3,000 as a minimum for special prizes at the exposition. It is expected next year that this board will increase this to $5,000, but this will not be done until the National Association of France has decided how much it will give.

The American and National Duroc Jersey Hog Association have each put up $1,500, a total of $3,000 for this breed.

The two associations known as the Chester White and the O. I. C. have appropriated $1,000 each for exposition special prizes, and also have offered $1,000 between them, making a total of $3,000 for prizes for white hogs.

At the annual meeting of the American Ayrshire Association, held last month, a resolution was passed that this association exhibit ten of the very best the breed can produce, as a view herd at the San Francisco exposition and pay the costs of their maintenance, not to exceed $2,000.

Mr. Culver, an enthusiastic Ayrshire man from Richvale, Cal., who spent last month among the herds of Canada, reports that the Canadian breeders expect to make a great display of Ayrshires in 1915.

At the last meeting of the American Cheviot Sheep Association it was decided to give $200 as a minimum for special prizes at the exposition. These world-renowned, hardy little sheep are as yet little known in the United States, but they have been great money-makers for the sheep farmers in the north of Scotland.

REGISTERED HOLSTEIN-FRIESIAN BULLS

THAT WILL INCREASE YOUR PROFITS.

Two of our herd bulls are from 28,000-lb. dams. Butter records average above 1,100 pounds. The only two cows in the world that have produced over 50,000 lbs. milk each in two years. Fifty cows on official yearly test. Fifteen cows, including several 3 and 4-year-olds, have averaged over 700 pounds fat and 20,000 pounds milk. Forty cows average over 600 pounds fat. Fifteen heifers with first calf average 490 pounds fat (600 lbs. butter). Estimate the value of a bull in your herd that will introduce 50 per cent. of this blood in the next crop of heifers. Prices, $125 and up. Have something especially fine to offer breeders of registered cattle. Write to-day for information.

Aralia De Kol. 28,090 Pounds Milk One Year.

A. W. MORRIS & SONS, Woodland, Cal.

SALVADOR STOCK FARM

HEADQUARTERS FOR

SHIRES

Gold Medal awarded to Henry Wheatley by the Shire Horse Society of England for the best Shire Stallion of any age.

SPECIAL—For the next month I will sell six Shire mares in foal at prices within the reach of anyone.

Have still on hand a few prize-winning Stallions at very attractive prices.

For Particulars and Prices Address

Henry Wheatley : : : Napa, Cal.

STEY-BRAE AYRSHIRES

BULLS FOR SALE

From imported cows. These bulls are large, with good colors.

For Particulars and Prices Address

E. B. McFARLAND, San Mateo, Cal.

Cocoanut Oil Cake Meal

Rich In Digestible Protein

An Appetizing and Economical Food For Dairy Cows, Hogs and Poultry

Because of the thorough digestive qualities of the protein in Cocoanut Oil Cake Meal its nourishing value is high and the percentage of waste low.

Besides, the feeder can utilize his farm products in preparing a perfectly balanced ration at the minimum of cost.

Free Sample and a copy of our booklet containing valuable information on the subject of "Successful Feeding" sent gladly on request. Write to-day.

If Your Dealer Can't Quote Prices Write Us Direct

Address Department C

PACIFIC OIL & LEAD WORKS

Manufacturers

155 Townsend St., San Francisco, Cal.

Sale of Army and Navy Goods

DIRECT FROM U. S. WAR DEPT.

Blankets from $2.00 to $5.00; Navy Blue Shirts, $1.75; Olive Drab Army Shirts, $2.50; Khaki Army Shirts, $1.00; Army Wool Socks, 25c pair; U. S. Knapsacks, 75c; U. S. Canteens, 40c; U. S. Rifles, $2.50; Mess Kits, 35c; Shelter Tents, $1.25. Other U. S. Army Goods to interest and please everybody.

Send for Free Catalogue. Mail Orders Promptly Filled.

SPIRO HARNESS CO., 307 Market St., San Francisco, Cal.

FOR SALE

BIG TYPE POLAND CHINA BOAR

A. WONDER III, Two Years Old

Bred by J. C. Bailey, Marshalltown, Iowa.

Apply for Full Particulars to

THOS. R. HANNA, Martinez, Cal.

Producer's Influence on Butter and Eggs

J. D. Holman

"I DON'T see how it is," growled a Stanislaus dairyman, "that the butter market takes such awful tumbles some times. And it is always my luck to get my stuff on the market just in time to get nicked by the cellar price. Seems to me things could be regulated better so that prices wouldn't jump around so."

I told a dairy produce merchant in San Francisco what the Stanislause farmer had said.

"Well," replied he. "The dairymen and farmers have no one to blame but themselves for severe market fluctuations, for they cause it. This is the way it happens. The San Francisco Wholesale Dairy Produce Exchange which establishes the price for butter, cheese and eggs, regulates these prices to correspond to the amount of stock on hand each morning and whatever quotation's made is for that day only. Consequently, whenever there is a free arrival of butter and eggs, prices are naturally going to decline and the reverse of this happens when there is a scarcity. Some of the worse drops I have seen in this market were caused by producers trying to play foxy and holding back their stock.

"It comes about in this manner. The market will not look very good to them so they will not ship their produce waiting for the market to mend. If enough of them hold back the market will go up under the weak supply on hand; then it is that the drop comes. Everyone in order to take advantage of the high prices will rush their goods to market with the result that it is swamped. That's where the producer makes his mistake. He wants to gamble, and then cries when he loses. If the producers only would realize that a steady market is best for all concerned much trouble would be averted. When prices keep jumping up and down everyone is in the air. The consumer is leary about buying, he is hoping for a greater drop, while the producer does not know whether he is going to make or lose on a shipment. But when the market is steady there are no chances of a heavy gain or a loss, but a good, healthy profit, which is all anyone should ask for. And the producer can keep a market steady by shipping his goods into the market centers regularly, and the more often he ships, the better it is. For the steadier the flow of produce coming in, the steadier the price that will be paid for it.

"The way the San Francisco Dairy Produce Exchange regulates prices is this. The various members of the exchange meet each morning and either buy produce or sell according to their needs. Where a merchant has an oversupply of butter he will sell to someone who is understocked and has orders to fill with the grocers and hotels. And the closing bid or offer to sell is what establishes the market quotations for the day. Say a sale has been made for "extras" at 30 cents a pound and then someone is willing to pay half a cent more for butter, 30½ cents would be the market quotation whether any sales were made at that figure or not.

"And the Dairy Exchange not only establishes the market price but also the grade and weight of goods. For instance, butter that will run more than 2 per cent short of full weight, cannot have any bearing on the quotation established. Butter that is sold as "extras" must be of such a quality so as to rank at least 93 per cent in a dairy test. All the other grades, such as "firsts," "seconds," etc., must come up to certain standards. Eggs have similar rating. Any grade of eggs other than strictly fresh cannot be sold or included in "fresh extras." And all eggs weighing under 24 ounces per dozen cannot be included in "extras." And if the producers will keep these grade requirements in mind when shipping, there will be no trouble when their goods are docked for failure to meet the standards.

Water Required by Sheep

Experiments have shown that cattle given plenty of water with their pasture contained more moisture and less dry matter than did the carcasses of cattle given pasture, but no additional moisture. It is a generally accepted principle of feeding that it costs more and more to produce meat as the moisture decreases and the dry matter increases. From this we are able to deduce the fact that it costs less to grow the steers that had plenty of water, and so made watery carcasses than it did to grow steers that had no water other than in their food and produced a dry carcass.

What is true in the cases of steers would hold equally true with sheep. Sheep given plenty of water will produce mutton more cheaply than will those deprived of it. Muscle expansion will be more active in the one case than in the other, and that is another reason why mutton production would be cheaper.

There is considerable water in any of the pasture crops that sheep eat, and they get still more moisture from the dew that collects on the grass blades in early morning and late evening; but from these two sources, while it gets enough water to keep it alive, a sheep still does not get enough to keep it in the very best growing condition nor to keep all its bodily processes going on in the most effective manner possible.

There is not an organ in the body that can function properly without water to aid it. Being one of the chief constituents of blood, water is carried to every part of the system, and not alone helps it in getting its nourishment, but also in ridding it of impurities. It is obvious that a large amount of water must be necessary to keep the sheep doing well. Enough is not got with the food and this amount should be supplemented by all the sheep will drink when given constant access to it.

Sheep Soon Show Neglect

Sheep are dainty feeders. They will not eat hay that other stock has mussed over, and they will refuse grain taken from a ratty bin.

Sheep should have a well-ventilated shed, high and dry. In dry weather they should be allowed their freedom to run out and in at will.

Nothing will feel or show neglect as quickly as sheep. Place the unthrifty ewes by themselves, and give them a little extra feed. Perhaps they are suffering from the greed of the bosses in the flock and are not getting a full ration. Dip the sheep immediately after shearing and again in about three weeks to destroy ticks that may have escaped at the first dipping.

Warm summer showers will not hurt sheep, but cold rains are different. If you are too busy to go after the sheep when you see a storm coming up, why not build them some sort of a shelter out in the pasture field?

Sure death to gophers. See ad. of F. D. Chemical Co., page 27.—Advt.

Put the young ewes and the barren ewes in a separate pen from those that are with lamb. They are likely to injure pregnant ewes at feeding time when all crowd in to the feeding trough together.

Like the Horse's Hoof

the patent drive wheel of the

Rumely ToeHold Tractor

grips the soil without packing it. It gives the flat backward pressure that enables the ToeHold to deliver so much of its power at the drawbar.
The ToeHold is low, narrow and light. It weighs only 8,400 pounds without extensions or shields—10,000 pounds with full equipment. Its height with limb shields is only 5 ft. 3 in., and its width with extensions but 8 ft. 6 in. It burns gasoline or stove-tops.
The ToeHold is one of the handiest tractors made. It will plow as close to the trees as a team and will turn a 10-foot circle. It is designed especially for orchard and vineyard work, but is excellent for plowing, hauling, and all other power jobs.
The ToeHold is California-built. Scores are in successful use everywhere. We have interesting literature for you. Ask for it and for the name of nearest dealer.

RUMELY LINES

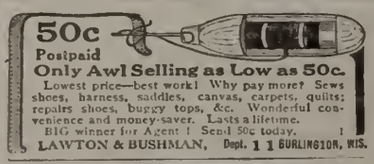
Kerosene Tractors	Threshing Machines	Cream Separators	Road Machines
Stationary Engines	Corn Machines	Feed Mills	Grain Elevators
Engine Plows	Baling Presses	Gasoline Tractors	Steam Engines

RUMELY PRODUCTS COMPANY
(Incorporated)
Chicago — Power-Farming Machinery — Illinois
SAN FRANCISCO — PORTLAND

Pure Bred Stock from the East

Am making frequent trips to the Eastern livestock centers and make personal selection of orders for pure bred stock and grade dairy cows. My frequent carload and trainload shipments insure the best possible rates on all kinds of livestock. Call or write me what you need.

W. M. CARRUTHERS, Livestock
721 HEARST BLDG., SAN FRANCISCO.



50c Postpaid
Only Awl Selling as Low as 50c.
Lowest price—best work! Why pay more? Sews shoes, harness, saddles, canvas, carpets, quilts; repairs shoes, buggy tops, &c. Wonderful convenience and money-saver. Lasts a lifetime.
BIG winner for Agent! Send 50c today.
LAWTON & BUSHMAN, Dept. 1 1 BURLINGTON, WIS.

98 cents
5 YEAR GUARANTEE
Railroad Watch
To advertise our business, make new friends and introduce our catalogue of Watches we will send this elegant Railroad watch by mail post paid for ONLY 98 CENTS. Gentlemen's size, full nickel silver plated case, locomotive on dial, lever escapement, stem wind and stem set, a perfect timekeeper and fully guaranteed for 5 years. Send this advertisement to us with 98 CENTS and watch will be sent by return mail post paid. Satisfact on guaranteed or money refunded. Send 98c today. Address R. E. CHALMERS & CO., 538 So. Dearborn St., Chicago.

PAINT WITHOUT OIL

Remarkable Discovery That Cuts Down the Cost of Paint Seventy-five Per Cent.

A Free Trial Package Is Mailed to Everyone Who Writes.

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powderpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire-proof and as durable as oil paint. It adheres to any surface, wood, stone or brick; spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manuf'r., 412 North St., Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write to-day.

GUARANTEED·COFFEE

Guaranteed to the buyer because it is a selection of the finest grown varieties. Notable for well-balanced character, smooth taste and rich flavor. Perfect coffee because specially imported and freshly roasted the day it is sent to you. Low in price because we are importers selling direct to you. CASWELL'S NATIONAL CREST COFFEE is in 5-lb. cans, sent you by Parcel Post, prepaid, for $2.00. A trial will show you. Address with order

GEO. W. CASWELL CO.
Coffee Importers,
520 FOLSOM STREET, SAN FRANCISCO
Also Dealers in Spices, Teas, Extracts and Olive Oils.
Agents Wanted.

The Ayrshire a Dairy Cow

—By C. M. Winslow, Secy. Ayrshire Breeders' Assn.—

AS a profitable dairy cow under any and all conditions of food and care the Ayrshire cow has no rival.

The place of origin naturally fits her by nature to be a hardy, tough, rugged cow able to withstand hardship, and to get her living and do well under adverse conditions.

Typical Ayrshire Cow—One of the Herd of the Stey Brae Stock Farm.

She has by nature a strong constitution and healthy body, free from disease, with strong resisting power against taking disease from her surrounding exposure.

She is of medium size, weighing from ten hundred to twelve hundred pounds, when given fair treatment while growing.

She is easily kept, being a vigorous feeder and not over particular about the quality of her food, either in the stable or at pasture.

In the stable she eats greedily whatever is placed before her, and if the food happens to be of inferior quality she does not look up at you with reproachful eyes or nose it over, but begins at the top and goes straight down through the feed, taking it as it comes, and does not seem to find out the quality of the food until it is all gone, and then looks up for more. In the pasture she does not wander around hunting for sweet morsels of grass, but takes the first that comes to her and fills herself with good grass, poor grass or browse, anything to fill up quickly with, and then begins to chew her cud, which she does rapidly and continually, whether at rest or in motion, or even on the run, seeming to realize that if she is expected to take home a full pail of milk she must get busy in preparing for the milking hour.

Probably this vigorous feeding habit is what in a great measure makes an Ayrshire cow always keep in good condition, and at the same time give a large supply of milk.

The position in the dairy that an Ayrshire cow fills to perfection is in the supply of milk for city trade and household use.

The Ayrshire cow will produce the most milk possible from the food consumed.

The milk is practically a 4 per cent milk, which is the standard quality for market milk and for table use.

Ayrshire milk is evenly balanced with casein and butter fat, the butter globules are small and the curd is friable, being easily disintegrated, all of which makes the Ayrshire milk a complete food, easily digested, and particularly adapted to invalids and growing children.

It has often been found that when the milk did not agree with children and calves that a marked change was observed when Ayrshire milk was substituted for the milk they had been using, and they became strong and healthy through the continued use of Ayrshire milk.

While the Ayrshire cow has almost always been kept for the milk supply, the high quality of her milk in butter fat strongly indicates that she could easily take a position in the front rank as a butter cow if it was desired and if bred for a butter cow.

While the Ayrshire is in no manner a beef animal exclusively, she is well adapted to turn into beef after her days of usefulness in the dairy are over, because she fattens quickly and by conformation is adapted to making a fine quantity of fine quality beef, being heavy in the hind quarters, thick on the loin, small boned and meat of good rich color, well flecked with tallow through the meat, giving it an attractive look.

Butchers are always pleased to get Ayrshire beef, because, as they say, it cuts up well.

Ayrshire steers are very profitable to feed, as they are quick growing, easily kept, always look fat and weigh heavy for their size.

Last, but not least, the Ayrshire is a handsome cow, and very pleasing to the eye and is a good all-round dairy cow—none better.

State Fair Directors

E. Franklin, recently appointed on the State Board of Agriculture by Governor Johnson, is a man of broad experience regarding the ranging of cattle and sheep, and will, no doubt, be a valuable member of the board as representing these interests.

Regarding his ability as a breeder of pure-bred livestock, it is doubtful if he can cover the field as thoroughly and efficiently as E. W. Howard, who lately resigned from the board.

It is urged for the pure-bred interests that when Governor Johnson fills the vacancies which are now open on the State Board of Agriculture one of them will be filled by a man who has given his time and energy to practical lines of pure-bred livestock.

The livestock show is one of the great drawing cards at our State Fair. Unless some of the directors are conversant with the pure-bred work there will be little to insure creditable livestock exhibits.

OLIVER ENGINE GANG

ITS WINNING FEATURES.

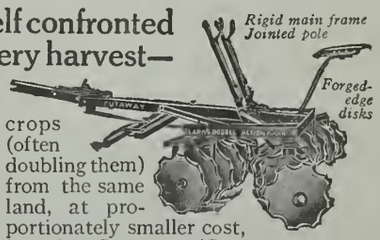
Strongest, most compact and shortest. All sizes. Plowbottoms operated singly. Will not choke. Large gang wheels. Large rolling coulters. Easiest lift. Uniform depth in uneven ground automatically maintained. Sections flexible and detachable. Depth regulation easy for shallow or deep plowing. Steel or chilled bottoms. Cheap shares. Write for Circular A for full details.

Sold subject to trial demonstration and guaranteed by the largest plow makers in the world.

OLIVER CHILLED PLOW WORKS, San Francisco, Cal.

How About Your Harvest?

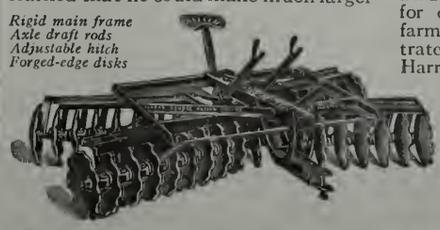
A certain farmer found himself confronted with the same problem at every harvest—



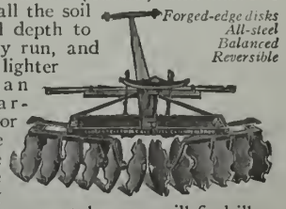
his yields seldom reached the mark they should. His profits were disappointing and, sometimes, distressingly small. He sought for the cause without success—until one day he read a

Cutaway (CLARK)

advertisement about Jim, the farmer whose land produced double that of his neighbor's, simply because he took a look ahead to the harvest when making the first preparation for planting. He followed the advice Jim gave his 50%-farmer neighbor and that very day wrote to us for a copy of "*The Soil and Intensive Tillage.*" In it he read about the chemical and physical properties of the soil, about how plants feed, and about intensive tillage. He learned that he could make much larger crops (often doubling them) from the same land, at proportionately smaller cost, by using CUTAWAY (CLARK) disk harrows. He got an entirely new idea about disk harrows and disk harrowing.



Do you know how much you lose where there are little hard ridges between the surface and the subsoil in your fields? Often the surface looks mellow and fine, and you are deceived. Do you know how much you lose every year because there is a clumpy strata between the seed-bed and the subsoil? You can stop these losses. CUTAWAY (CLARK) disk harrows pulverize all the soil to the full depth to which they run, and they are lighter draft than other harrows, size for size. There is a style and size for every farmer. In our catalog you will find illustrated and described Double Action Engine Harrows; Double Actions for horse power for both orchard and field work; Corn and Cotton Harrows; one-horse harrows for field, grove and garden; Bush and Bog Plows; Right Lap Plows; California Orchard Plows—in fact, the tool *you* need. Remember, our catalog "*The Soil and Intensive Tillage,*" is free for the asking. Write for it today.



THE CUTAWAY HARROW CO., 996 Main St., HIGGANUM, CONN.

Maker of the original CLARK disk harrows and plows

Success Out of Failure in the Hog Game

By E. E. Miller

THE doctor told Howard Barry that he would have to give up his confining work in a San Francisco insurance office and get out in the open. This was four years ago in October.

After much searching, Barry rented twenty acres of land near San Jose, nine of which were in prunes, three in mixed fruits and the rest open land. Around the place was a hog tight fence, and this was Barry's downfall. When the real estate man told him the nature of the fence, he thought of the two-ounce pork chops he used to buy for five cents apiece; also, he remembered having read somewhere that there were barrels of money in the hog game, and he decided then and there to jump into the business.

"It was a case where ignorance was almost bliss," says Barry. "There was hardly a day during the first year that I did not curse my luck and wish every hog at the bottom of the ocean. But I couldn't quit until I broke even, and I'm glad now that I didn't, for I think I see my way clear to make money out of my experiences in the hog business.

"I made my first mistake when I bought my sows. I got them one or two at a time from different farmers until I had eleven. I put them together in the orchard, and that's where I made an error. They all seemed healthy enough when I bought them, but somehow, from the excitement of the trip or the change, they all took sick and three of them died.

"But when I bought my registered Duroc Red boar I kept him away from the other stock for two weeks until every chance of his bringing sickness has vanished. I have a pen built now especially for this purpose, and whenever I get any new blood, it doesn't matter if they come from the cleanest piggery in California, they are quarantined for two weeks. Besides, I have an old shoe brush with which I scrub them with sheep dip, to be on the safe side.

"But in the loss of the three sows I found that my troubles had only started. I was soon troubled about feed. It didn't take the eight sows long to eat up all the grass and fallen fruit on the place. In a shed I found about a ton of moldy prunes. I began giving them to the hogs, but they did not do very well until a neighbor recommended that I scald the prunes in boiling water and then pour off the scum, letting them soak. I did this and the sows picked up and did better right away.

"About two months before the sows were ready to farrow, I had a chance to buy a lot of barley that had been damaged in a warehouse fire. By pouring this on the ground under a shed and turning it over each day, I succeeded in drying it so that it would not mold. I then began feeding this whole barley to the sows and it was here I made another grave mistake. Fortunately, a large portion of the barley passed through them undigested, but still they retained enough to become very fat. The dry barley also constipated them and I had to keep Epsom salts in the bottom of their drinking water.

"Then a month before they were ready to farrow I fixed pens in an old shed and put the sows in there; another piece of foolishness. Finally the little pigs came. From the eight sows, 51 pigs were born; but 18 died within two days. One fat sow was so clumsy that she stepped on three of her pigs and another sow ate two of hers, so that at the end of the first month I had but 28 pigs.

"You can see that my first year's experience in the hog business was a flat failure, but I had learned a lot. The first thing I did was to plant three acres in alfalfa and two in yellow tankard beets and carrots. I wanted them for the sows so that they would have green, succulent feed all the time and the dangers of constipation would be lessened. Then I took what barley I had left and had it ground and I found that I saved at least a third of it. And I never again penned my farrowing sows until after the pigs were born. I find that they do 100 per cent better if they are allowed to roam about and get plenty of exercise during this period.

"When my sows are heavy with pig I make it a point never to give them any dry feed, nor do I let them get fat. During the winter I give them mangels or carrots, a weak slop occasionally of crushed barley and chopped alfalfa hay soaked in water. I find that feeding my alfalfa in this manner is a considerable saving. They do not waste half as much as they do when it is fed dry. Another thing I have learned in regard to my alfalfa pasturage. Because of the small plot that I have in alfalfa, I have found that it pays me better not to let the hogs on the pasture at all, but in the summer I cut it and fed it green. Each day I cut a patch with a scythe and then turn the sprinkler on it. In that way I get a much larger tonnage per year than if I allowed the hogs to eat it off.

"I have a great deal of fruit on the place which I utilize, but green fruit scours the hogs badly unless some dry feed is given in conjunction with it. So now I feed a little hay and barley when they are eating fruit. I make a saving in my dry hay by feeding it on a dry, hard piece of ground. By scattering it lightly over the surface the hogs can pick it up and very little is trampled under foot, which would happen were it thrown in piles.

"One fruit that caused me a great deal of bother at first was figs. I have several trees of the Mission variety, and they are very prolific bearers. I discovered that I could not let the hogs pick up the figs from under the tree because they stepped on more than they ate, and, besides, they scoured badly. But I found that by scalding the figs and feeding them in troughs there is no waste and the scouring is lessened.

"At first I was also troubled with lice and fleas. The sows spent most of their time scratching against the trees. To get rid of them I heated caldron after caldron of hot water and threw it in the shed where they stayed I then sprayed the place with a strong solution of carbolic acid, and afterward whitewashed it. I tried spraying the hogs, shutting them in small pens and covering them with sheep dip, but they still scratched. So I got into the pens and tied the sows down and scrubbed under their ears and legs. In this way I got rid of vermin and it has paid me, for I find that they respond to feed better when they are clean.

"For keeping the hog's system toned up, I always have a trough of salt near their watering place. Besides this, I frequently scatter sulphur and wood ashes in their feed. Then every spring and fall I put turpentine or coal oil in their feed to kill off worms and the like Another item, I always keep their water fresh. Every day I see that clean water is put in their trough.

"One help that I picked up at Newman has added wonderfully to the comfort of the hogs. I noticed that during the summer when I would make wallowing ponds for them that sometimes the mud would cake and a scab would form under it. So when I saw a concrete wallowing pen I made my hogs a small one, 8 by 10 feet. During the hot weather the hogs spend most of the day in it. It is six inches deep, so that there is no danger of the pigs drowning

"Thus by handling my hogs properly, especially the farrowing sows, I have made success out of failure in the hog game. This last season I had an average of a little better than nine pigs to the sow. That is, with three sows now I raised as many pigs as I did with eight my first year. As a result, I carried five sows when they were virtually a dead loss to me. And it is in the litters that the hog raiser either loses or makes money Where a sow can't raise six pigs or more she is a failure, or at least the man that is handling her is. Either the sow should go out of business or the man. Of course, if the man keeps it up long enough, he will go out eventually.

"My advice to one starting in the hog business is to go slow the first year. Experiment on only a few hogs, so if failure comes the loss will be small. Also, conditions vary in different localities, especially in feeding, and one must regulate his feeding operations to get the best gains for the least money. What is an expensive feed for one may be a cheap feed for his neighbor."

The Hog an Income Producer

By Sam Raddon

"THIS little pig went to market, and helped pay off the mortgage on the old homestead," might be a new adaptation of the old nursery rhyme.

Never before in the history of the Northwest has so much attention been given to the raising of hogs. Not a less, but rather a more important feature, too, is that at the foundation of this new "back to the hog" movement, there is a well-defined programme of scientific education being executed The recent ten-day trip of a "hog special" sent out and equipped by the Oregon Agricultural College and the railroad companies, as a demonstration train, is but one of many details of this campaign of education

Hog-raising and specific study of scientific breeding is an investment rather than a speculation.

Witness the case of the "little pig that went to market," which happened to begin its career down in the Rogue River country in Oregon.

On Christmas morning when the family youngster's savings bank was opened it was found to contain $4.83. Of a practical turn of mind the lad's father bought him a young sow, at an expenditure of $4.50, the lad retaining the 33 cents for sweets. The following August the sow gave six pigs. Mother and sow was then fattened for three weeks, "went to market" and was sold for $11.83. A little later four of the pigs were sold for $13.

The two remaining pigs weigh 70 pounds each and when they too "go to market" they will bring at least $9.80. This will cover the cost of feeding all the pigs, leaving a profit of $24.83 from the penny bank transaction.

What next? The profits will be invested in thoroughbred Duroc Jerseys and there is no telling where the money-making will end.

This "little" pig went to market.

In keeping with the growing ideas of scientific hog culture is the increased attention being paid to proper, comfortable and sanitary housings for the drove and the litter. A model plant, embodying the latest and best ideas in hoghouses, is the electric-lighted, concrete structure recently completed by State Senator D. A. Scott, near Ritzville, Washington. Others are following his lead.

The hog is certainly coming into its own. County agriculturists are urging farmers to give more attention to hogs rather than specializing in other lines. County fairs are going to offer prizes to children for record hog-fattening. There are better profits in corn and alfalfa on the hoof than otherwise.

To receive top of the market prices the hog should be sold when it weighs about 200 pounds and not more than 225 pounds. Buyers are demanding not excessively fat or lean bacon, but that of medium growth, and that is the kind they are willing to pay for. When there is less profit in lard than there is in meat it will pay to raise medium-sized hogs for the market.

The hog has come to stay.

Livestock Progress Last Year

BETTER than any other single thing the report of the U. S. Department of Agriculture on livestock statistics January 1, 1914, shows the way that livestock is progressing. This report gives the number of the different kinds of livestock on American farms at the beginning of the last four years, also values of same and the way they compare with other years.

Horses and mules each increased slightly in numbers and decreased slightly in average value; milch cows more than hold their own in number and also have advanced greatly in price in the year, averaging in value 8.92 per head more than in 1913; other cattle (beef) fell off in number but increased in individual and total value; swine fell off considerably in numbers, but increased somewhat in average value; sheep decreased greatly in numbers but are stated to have gained slightly in average value. The total value on January 1, 1914, of all animals enumerated is given at $5,891,229,000, against $5,501,783,000 on January 1, 1913, a gain in value for the year of 7.1 per cent.

The number and average value per head of the different classes of animals on these two dates are stated in the report as follows:

	Number	Value
Horses, 1914	20,962,000	$109.32
Horses, 1913	20,567,000	110.77
Mules, 1914	4,449,000	123.85
Mules, 1913	4,386,000	124.31
Milch cows, 1914	20,737,000	53.94
Milch cows, 1913	20,497,000	45.02
Other cattle, 1914	35,855,000	31.13
Other cattle, 1913	36,030,000	26.36
Sheep, 1914	49,719,000	4.04
Sheep, 1913	51,482,000	3.94
Swine, 1914	58,933,000	10.40
Swine, 1913	61,178,000	9.86

How accurate these figures are cannot be stated. Last year severe criticism was aroused by a similar report, but since the estimates were made by about the same set of men, they can be fairly used for comparison. Inaccuracies are suggested by the fact that sheep are stated to be more valuable than a year ago in spite of the way that free wool hit the industry very hard. Sheep increased during 1910, but have fallen off in numbers at the rate of about a million and a half per year ever since.

The other kinds of animals, except swine and beef cattle, have been practically holding their own, or better. We cannot do without the horse or mule. The greatly increased value of the milch cow emphasizes the firm basis of the dairy industry, and although the decrease in range cattle is easily explained by the decreasing amount of range land, cattle prices have advanced so rapidly that that industry is on an excellent footing. The decrease in swine population is due to temporary causes like hog cholera. The use of hog cholera serum has removed the greatest risk from cholera and there is not one branch of the stock business, except possibly sheep growing, but what looks out on a bright future.

Commissioner Lively Returns.

D. O. Lively, chief of the department of livestock, has just returned from a trip through South America as a member of the South American Commission of the Panama-Pacific Exposition

The commission made a most extensive trip throughout South America, traveling down the eastern section and up the Pacific coast Mr. Lively reports a wonderful interest in livestock, especially in the Argentine Republic, where on one ranch he saw 3,000 registered Shorthorns and 2,000 registered Herefords. At the head of this Shorthorn herd was a bull which cost $32,000 at public sale. This bull's mother was bred and owned by C. E. Leonard of Bell Air, Mo., thus showing what the blood of the great Lavendar Viscount (twice champion of America) has done for the Shorthorn breed in our own and other countries.

Coming up the Pacific coast through Chile, Bolivia, Peru and northward, Mr. Lovely reports a very intelligent interest in the improvement of livestock of all kinds, and finds the promise of extensive trade from our Pacific coast to these South American countries.

Cleanliness means much in the management of sheep.

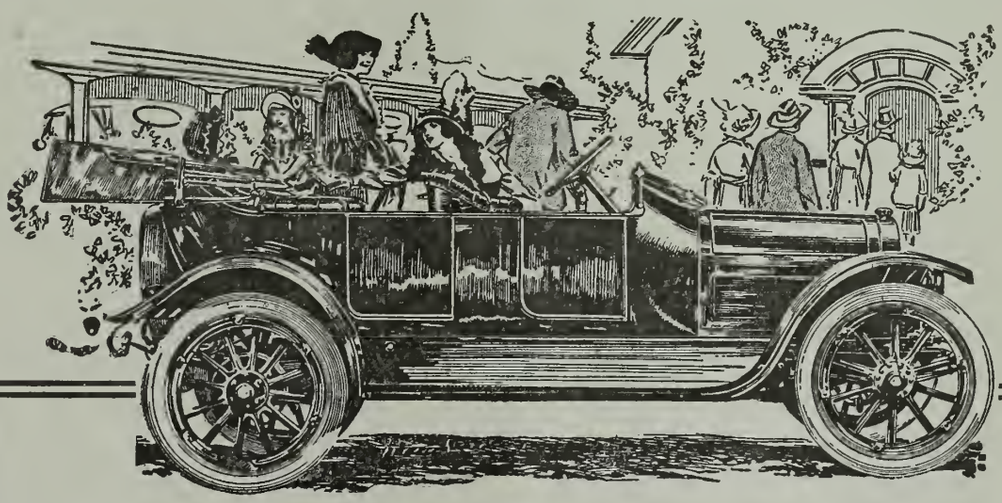
Our stock of proper commercial varieties of citrus trees never was better than now. The varieties we recommend as staple and commercial are

Eureka Lemons and Washington Navel Oranges

It is sometimes hard to distinguish between the known standard varieties and others that are not so well known and proven and that are really novelties. **Eureka Lemons** and **Washington Navel Oranges** are the known, tried and proven commercial varieties.

We will gladly quote prices on one tree or on a carload.

The FRESNO NURSERY CO. INC.
HONEST · NURSERY · STOCK
1824 Tulare St., Fresno, Cal.



For Value Received - - $1,785

A full forty-five horse power motor built in the Apperson Way—T-Head cylinders cast separately. Oiling and cooling systems that conserve the power of the engine and get it to the rear wheels—not into the muffler. A patented contracting band clutch that won't slip, won't grab and needs no attention.

Apperson "Jack Rabbit" Four Forty-five
"The Wizard of the Hills"

These are a few of the *real* merits. The one-hundred-cents-on-the-dollar proved efficient values in every Apperson car.

Our overhead expense is low. Every officer in the Company holds an active position. There is no "deadwood." No fancy salaries paid to do-nothing officers and dummy directors.

Our production is relatively small. Never will we permit it to reach the point where quantity interferes with quality. The efforts of a know-how organization are concentrated on a *limited* number of cars—all most important factors in the right manufacture of a service-giving car at this within-reach-and-reason price of $1,785.00.

The illustration above gives but a faint idea of the car's graceful beauty. Get in touch with our distributor nearest you and *see* it. Prove for yourself by actual road work its power, speed and smooth running qualities—that in it there are units of value to the *full amount of the purchase* price Or write us direct for Complete Art Catalog showing as well the Light Four Forty-five at $1,600; the Six Forty-five-fifty-eight at $2,200.

Apperson Bros. Automobile Company
305 Main Street, Kokomo, Indiana

Apperson Distributors in California

Los Angeles - - - - - - - The Leon T. Shettler Co.
San Francisco - - - - - - Myers Motor Car Co.

ORCHARD and FARM

ESTABLISHED 1888

IRRIGATION

VOL. 26 MARCH, 1914. NO. 3

Published Monthly at Hearst Building, San Francisco, Cal., by the Country Life Publishing Company.

SUBSCRIPTION RATES

One year, domestic postage paid ---------- $1.00
One year, Canadian postage paid ---------- $1.50

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

PROBABLY never before has every branch of California agriculture faced so favorable a season as it does now. Often conditions that are excellent for one crop are rather unfavorable for something else, but as the warmth of spring time develops one can hardly point to a single phase of California agriculture where improvement could reasonably be desired. Warm winter rains have filled the soil with moisture and snows are plentiful on the Sierras. Livestock have had no weather to oppress them and they are grazing knee deep in pasture. The grain acreage is greater than for decades and in better condition as well. Rains stopped just at the right time to give farmers plenty opportunity to catch up with their work. Cool nights have held back fruit buds to normal during clear weather; fruit trees were never more full of buds nor had better prospects of turning those buds into fruit. Stockman, fruit grower and general farmer all find things as they should be. Material development is making rapid strides and the eyes of America and the world are pointed our way. Even the prospect of bumper crops does not suggest poor prices, as it sometimes does, for markets are in excellent shape in spite of dull financial conditions. They have been getting better of recent years and now financial conditions are brightening immensely, and the Panama Canal will open to us quick transportation, cheap transportation and new and hungry world markets. Climatically, economically and otherwise California agriculture faces a great period of prosperity.

o o o

AS California looks out upon new conditions, Orchard and Farm undertakes as definitely as possible to keep at the head of the procession in practical and successful agricultural methods. One of the leading features of the agriculture of the future is intensive livestock farming, where the owner of the "little farm well tilled" and of a big one, too, will do his part in producing high class animals for meat, milk production or labor. One of the clearest things to-day is the changing aspect of livestock production. One definite method of Orchard and Farm in establishing these new conditions is indicated in the beginning of a series of articles on "Intensive Livestock Production," the first of which, on the production of the draft horse, appears in this issue and will be followed by others on the handling of other domestic animals. All of our livestock department, in fact, relates to improved livestock methods. The present issue is typical of those to follow.

o o o

TRACTORS, gas engines, electric motors, pumps and other means of putting mechanical force to the aid of agriculture are probably the greatest single agency in developing modern agriculture in California. These tractor demonstrations which Orchard and Farm is conducting, one held at Fresno, February 19 to 21, and the other to be held at Marysville, March 5 to 7, also indicate the commanding position that this journal is taking in helping the farmer to farm to most advantage. Tractors have been designed for almost all kinds of farm work and they are no more of an experiment than the automobile. These demonstrations will simply show every one that attends what tractors are best suited for his special work, how well they can do it, methods of management, cost of operation and everything that relates to tractors on the farm. Likewise there will be seen in operation many types of plows, cultivators and other tools used for soil management. There is not a method that could be devised that would be so helpful to a farmer in learning about farm equipment for good tillage as these demonstrations. Every person in California interested in tractors and soil management is herewith invited to attend the demonstration. You will be well entertained by Orchard and Farm and by the good people of Marysville and Yuba City. The demonstration at Fresno in February showed the pleasure and value of attendance.

WHILE we all know that agriculture is the most progressive, scientific, intellectual, serviceable and desirable profession in existence, a report from the U. S. Department of Agriculture last month emphasized the fact. It states, after an investigation of farm profits and education, that "farmers with a high school education make nearly double the average income of those with merely a common school education. . . . No one ever hears a farmer regret that he spent a part of his early life in school." The reports also show that as a rule there is a steady increase in prosperity with the amount of education obtained, going from no education to common schools, high schools and colleges. The rule holds true, whether a man is an owner or tenant farmer. Another thing mentioned is that the earlier in life a man starts farming, the better success, as a rule, he makes out of it. Moral: If you are not farming and want to be, hurry up about it. Also, keep learning all the time, or you will get left. We firmly believe that success in farming through education comes, not from what a man has learned, but from the fact that he continues to read and study all he can. Any natural farmer that tries to keep up to date will more than win.

o o o

THE University of California was having its say about agricultural education from another angle while the above Department of Agriculture report was going abroad. It told of the widespread demand in California for an agricultural education. The university has started correspondence courses in agriculture and other subjects. By February 1, 1,992 persons had enrolled for agricultural courses and only 519 in other university subjects, so that agricultural education in California is about four times as popular as all other kinds of education put together. No wonder California hums with progress! Incidentally and in line with the above, it might be mentioned that the agricultural department of the University is so much in demand that it takes about half of the funds appropriated by the Legislature to provide for this one branch of the University, and then the faculty is nearly swamped with work and is having more to do all the time. These agricultural courses by correspondence, by the way, cost only white paper and postage and those 1992 mail order pupils will be but a small fraction of the whole when all our farm population (and city population that wants to get back to the land) realize just what is offered. A circular issued last month by the University at Berkeley and given free on request will give details.

o o o

IT may not be right to give too great a dose of scientific agriculture all at once, but another circular issued by the University forces our hand. It tells about farm advisers and it is worth reading for its own merit and for an interesting story contained therein. For $2,000 per year any county in California can get a farm adviser whose full salary, but not expenses, will be paid by the University. He will bring the newer points of scientific agriculture and modern business methods back to the farm itself, give details on things most farmers know ought to be done but don't know quite how to do, and help along in public work that everybody wants but nobody does because it is everybody's business. A couple of counties have the advisers already, others are after their men, and the best men will go to the counties that get busy first. If you think that the advice of Orchard and Farm is worth taking, you will see that your county gets a farm adviser as soon as it can.

o o o

COMING back to the delights of the present season, hardly a single fact is so agreeable as the way that our citrus trees have shown an ability to "come back" after the big freeze of January, 1913, the worst in the history of the industry. Our 1913 crop was lost, it is true, except where the growers fought the weather and saved their fruit, but the forecast of shipments of the season now in progress shows that even trees hard hit by the cold are coming ahead wonderfully and that we are not only making up lost ground but that the season is going to be one of the greatest ever and much larger than that of 1912. Our groves north of the Tehachapi have produced the largest and finest crop ever shipped, but the northern trees were not badly hurt and were known to be hardy, and now it is proved that in the main citrus districts in southern California the trees are far from weaklings also, for they are producing big crops. This is easily explained as the effect of the climate. Both trees and fruit from warm, humid climates, like Florida, are much more susceptible to cold than trees in California, and now it is shown that even when our trees, made hardy by our dry atmosphere, are badly hit, they recover readily from the same amount of injury that would leave a tree in a less bracing climate an invalid for years.

o o o

IN our modern agriculture a fundamental thing is to handle the farm produce so as to get full value without the middleman gouging all the profits and demoralizing the market as well. California farmers are world famed for the way they by co-operation have broken the rule of the middlemen. Citrus growers, walnut and almond growers, lima bean growers, raisin growers, berry growers and others in greater or less degree have undertaken co-operative marketing and are gaining in strength every year.

Right Agricultural Policies in California

IT is at this time, when the warmth of spring makes itself clearly felt, the trees begin to burst their buds and livestock production takes on new features, that the California farmer can best figure the beginning of a new year. In a double sense is this season a new start, for there is lots of moisture in the ground, everything is favorable for progress, and the development that has been retarded by the past two very dry years can go forward in full force.

In the most prominent place of all should be put the economic welfare of the farmer and producer. Only by getting full value for his products can he farm properly, or will the State thrive. Correct farming methods are needed, but the quickest and best way to get these is to make farming a financial success. When farming pays well, the farmer will keep high-quality stock and feed and care for them properly, spray his trees, cultivate his soil well and otherwise farm well and live well.

To prosper financially there is needed fundamentally a better control by the farmer of the produce he sells. This may come largely through co-operation of the right kind (enough of unwise co-operation has been tried), and co-operation in buying as well as selling. It will come through standardization and improvement of the quality of products shipped and through keeping in closer touch with markets and market methods. Better rural credits, along the methods developed in Europe, will not be the least important aid to farm progress.

Strong agricultural organizations will not only aid in bringing together farmers that are interested in a given line of work, but it will make better social conditions, develop more public and neighborhood spirit and make farm life more harmonious and enjoyable.

For long the farmer has been neglected in legislation and in the great work of public expenditure and development. In public help for dairying, irrigation, marketing, good roads and transportation, to say nothing of other forms of legislation, the farming population has been largely neglected. In recent years the farmer has in part been coming to his own and it is the need of the whole nation, as well as of the farmer himself, that he be given every advantage in legislation and development. Strong agricultural associations of all kinds and for all purposes, besides doing their own special good, will do good by giving the farm the legislative consideration it deserves.

There is greatly needed in California better soil methods, of which fertilization is only a part. By keeping humus in the soil, cultivating properly, following rotation of crops and replacing lost plant food, our soils can be made more productive.

Our greatest single opportunity for improvement is irrigation. All expense in diverting streams running to waste and storing water in the mountains for summer use will be repaid many times over. Well constructed distributing systems and a wise use of water will make water go farther and be worth more, and this irrigation development we claim should, whenever possible, come through irrigation districts rather than water-selling companies. Meanwhile the utilization of underground water by the individual farmer in sinking wells is as profitable to him as the utilization of streams is to the public. It is an old saying in California that it is water and land that counts more than land and water. Of the two the water is more valuable.

In California to-day no other one great division of agriculture needs so much promotion as livestock. In dollars and cents stock is a winner, which is enough to give it a high standing. Our long growing seasons give California an unrivaled opportunity to produce fine stock of every kind, and despite our youth we have developed world-renowned driving and running horses, world's record dairy cows and as fine beef cattle, sheep and hogs as have been produced anywhere. Alfalfa is the king of all stock foods in bone and muscle making and California is noted for her alfalfa

Thanks to J. Pluvius and the Sun Spots.

To pure-bred men California has the whole of the Oriental and Pacific trade in pure-bred stock awaiting. In less than a year the Panama-Pacific International Exposition will open its gates and the future of California pure-bred livestock trade for decades to come be determined by the performances there of California-owned stock, so now of all times is the time to help livestock.

Our new livestock industry will be built on a different basis from the old. It will be done to a considerable extent on an intensive basis, with quality the fundamental point. Only by the best of attention and care will most of our livestock have the quality that will count and only by having the quality will intensive livestock raising pay.

Our need is for more pure-bred stock and better to head our grade herds. Good breeding has to be emphasized. Good feeding is equally essential, and the greatest single point on this subject is the raising of some supplemental feed to go with alfalfa. It may be corn, barley, one of the sorghums, or something else, but theory and practice show that intensive livestock production prospers best when something besides alfalfa is fed.

Our livestock must come in large part from the farm rather than range. Our soils require it, American meat hunger demands it. The blood of the white race requires the handling of fine animals, and farm work best fits in with such stock. A big feature that is here and is rapidly increasing is the finishing of range cattle and sheep on alfalfa and other farm crops.

Dairying is to be the greatest part of the livestock industry. as it affects the small man. In addition to the benefits of better breeding and care, great possibilities open through the keeping of dairy records and the production of a finer product.

These are merely general principals, the details have to come separately, not in a summary of California's agricultural policies. It is the duty of a farm paper, after outlining the principles that underlie agricultural progress, to follow out those principles in the reading matter appearing in its columns every issue. The above is in brief form our ideas as to the course California agriculture is taking and should take. Our aim is to print those things only that are actually helpful to our readers, so that at least a good proportion of readers will find something in each article that is of definite, actual value. The closer we can come in touch with actual farming conditions and methods the better suited we will be.

In fulfillment of the policies outlined above, we begin this issue with a strong livestock department. Each issue we hope to have illustrations that will typify the best animals of the breeds shown, or indicate something beneficial in livestock methods, while our reading matter will be largely written especially for us or appear because of particular merit, and what holds true of the livestock department will hold true of other departments also.

To make this paper the service that we wish it to be to our readers and to California agriculture requires to a certain extent the cordial co-operation of our readers. If you are pleased, subscribe and get neighbors to subscribe also. If you are puzzled over some particular problem, write in and ask us about it; if you know a better way of doing than is stated in the paper, tell that way, so that others can follow it; if you want a subject discussed that has been ignored, tell us your desires; and if you think that a certain space is being wasted, tell us about that, too, and, unless indications are that a large proportion of our readers approve our policy, we will follow your suggestions.

We are not only starting a wonderful year in California, but we are at the beginning of a wonderful series of years, in which the Panama canal, the great Exposition, high-class immigration and great material development all have their part. "Orchard and Farm" wishes to also be a leading factor in agricultural progress.

TREES
FRUIT & ORNAMENTAL
Place Your Orders Now
We have a magnificent stock of all the best varieties of fruit and ornamental trees, vines and plants. We can fill your orders promptly for almost any quantity of APPLES, PEACHES, PEARS, APRICOTS, ALMONDS, WALNUTS, BERRIES, FIGS, ORANGES, LEMONS, ETC., as well as Ornamental and Evergreen TREES, Shrubs and Hardy Field-Grown Roses.
WRITE FOR ILLUSTRATED PRICE CATALOG—FREE.
Fancher Creek Nurseries
INC.
Paid Up Capital, $200,000.
Geo. C. Roeding, Pres. and Mgr.
Box 41, Fresno, Cal.
ROEDING TRUE TREES FRESNO, CAL.

1914
SPECIALTIES
For the FLOWER and VEGETABLE GARDEN
GIANT PERFECTION
WINTER STOCK
QUEEN TOMATO
and many other splendid specialties are shown in our 1914
Complete Catalogue
Handsomely illustrated—much new information for the grower.
MAILED POSTPAID FOR THE ASKING
Please mark letter Dept L.
Germain Seed & Plant Co.
Established 1871
326-328-330 SO. MAIN ST.
LOS ANGELES, CALIFORNIA

One Man can run it.
BIG MONEY in the OFF SEASON
Earn $2000.00 a year extra money, besides your regular farm work, with the
Improved Powers Boring and Drilling Machine. Bores a well 100 ft. deep in 10 hours. One man can run it; a team operates it and easily moves it over any road. Bores everything except hard rock, and it drills that. No tower or staking, rotates its own drill. Easy terms; write for catalog.
Lisle Mfg. Co.
Dept. 1, 625 Third St., San Francisco

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted FREE
Watson E. Coleman, Patent Lawyer, Wash., D. C.

Pointers on Tree Planting

THE following on tree planting, coming as it does when most of our fruit trees are being set out, is not a restatement of old rules, but rather an outline of a few pointers over which there is often a difference of opinion and practice. Things commonly known and practiced are skipped over.

The place where most mistakes of all are made is in planting trees entirely on personal likes or dislikes, or upon the way that certain varieties have paid in general the last season or so. The fundamental consideration should be the selection of the variety best suited to a piece of land. If the suitable variety is desired, plant it, but don't plant a tree not well adapted to location however prosperous the past season has been. Or if some land just suits a certain kind of fruit for which prices have been bad, never mind, for bad markets now usually mean good markets later.

The man that grows the best kind of fruit always wins out.

As it is the best that wins, so the better the soil and care, the better the results.

It pays to see that the soil is deep, rich, well prepared, and the land smooth and easy to irrigate and work. No soil on earth is better for fruit growing than that formerly growing alfalfa. There is an old saying that but one hole is needed for an orchard; in other words, that the plowing should be so deep and thorough that no special digging is needed in setting out individual trees.

One of the biggest things in soil preparation for trees now is dynamite, which shatters hardpan if such exists and loosens a packed subsoil where regular hardpan is absent. Dynamite, however, should not be used where the soil is wet or it will do harm by packing the soil. The best simple test is to see if the soil is wet enough to run together when pressed into a ball. If it will not puddle when pressed together with force, it is safe to dynamite and profitable to do so. A dynamited orchard not only means more soil for the roots, but more thorough irrigation and air circulation. It is good for old orchards as well as young. The use depends largely on whether or not the subsoil is packed and would be broken by blasting.

A striking feature of present day tree methods is the fact that trees are being planted farther apart. Overcrowding has meant shade and smaller crops of inferior fruit. Trees once planted 20 feet apart are now going in 24 feet apart and varieties once planted in 24 feet rows now are in 30 feet rows. It is a matter of sunlight mainly, for the richer the soil and the better the care, the more room the trees need, and it is good soil and care that win. The square system of planting also is superseding all others.

Temporary waste of land is a common argument against good distances between trees, but intercropping while the trees are growing is making this argument void. Young trees use little moisture and that which several years later would be needed for the large trees might as well in the meantime be used for catch crops. The governing rule in catch crops is to see that the trees have all the moisture and soil they want by rainfall, irrigation, tillage and otherwise, and any excess can be used for other things.

As a rule, but not always, low standing crops, like tomatoes, peas, beans, melons, pumpkins, peanuts and sweet potatoes are better than high standing plants, like corn or the sorghums. If there is plenty of water for irrigation, alfalfa is a great success in a young orchard, and in old too, with some kinds of fruits. It pays good profits, enriches the soil and loosens it up to a great depth for the tree roots to follow. A strip of land about 10 feet wide should be cultivated near the trees. Alfalfa should seldom be planted with trees except in deep and well drained soil.

When it comes to the actual handling of the trees it can be said that there is often unnecessary loss through carelessness. As little exposure of roots to the air as possible should be permitted and when heeling in the moist soil should be packed close to the roots. Some varieties are hardier than others. Figs are especially tender and a little carelessness in root exposure may mean a loss of 25 to 30 per cent.

All bruised roots should be cut off and a clean cut left. Frequently swellings are found on roots of the stone fruits. Such trees are usually thrown out at the nursery. They certainly should be thrown out on official inspection and never planted.

The trees should be set in the hole with the union of the top and the root a little below where the level of the ground will be and the top soil filled in around the roots. If, however, barnyard manure or other fertilizer is used, it should be applied to the top of the soil and not around the roots. The earth should be tramped in the hole so as not to bruise the roots, but the surface soil left loose.

Details on laying out the land, pruning the tree at planting, and so on are too well known to need remark.

One of the greatest dangers to the neglected tree the first year is sunburn. Invariably protection is highly desirable until such a time as new shoots provide shade to the bark. Tree protectors are excellent and should not fit too close nor be of a dark color. Whitewashing should be done sometime to every tree of any age where the bark is exposed. It protects by reflecting the light. A good whitewash is composed of about 30 pounds of lime, 5 pounds of salt and 4 pounds of tallow. The latter acts as a repellant against rodents. Many other whitewash receipts are acceptable. The whitewash should be applied before the weather warms up appreciably and should be replaced if rains wash it off.

A lack of knowledge of the proper types of soil for different fruit varieties is not usual, and the following will show both what roots are adapted to the different kinds of fruit, and what soils go with those roots. A different combination may be satisfactory, but usually it will not be.

Almonds.—Can be grown on almond or peach root. Almond roots are preferred where the soil is very deep; peach roots are more satisfactory on shallower soil—especially sandy soil where irrigation is practiced. Very favorable locations as regards spring frosts are desired. Apricot roots can get along with less moisture than peach roots.

Apricots.—Good on either peach or apricot root, the former on light soil and the latter on heavy. Blossoms are quite susceptible to frost injury. Plant 25 to 30 feet apart.

Cherry.—Likes deep, rich, well drained soil with sufficient natural moisture. A rather heavy loam is best and the Mazzard root is to be chosen for such conditions. On shallower, drier, or less satisfactory soils, the Mahaleb is usually better. Good locations are hard to find and generally are at the side of some water course.

Peach.—This is usually grown on own roots. A deep, rich loam is best

(Continued on Page Seventeen)

Nurserymen for Forty Years
26 YEARS IN CALIFORNIA
KIRKMAN TREES GROW AND BEAR TRUE TO NAME
Wholesale propagators of first-class trees and vines.
420 acres in growing nursery stock in Fresno, Madera and Tulare counties. Three million trees, two million vines. Every plant propagated from heavy-bearing parent trees and vines.
Planters will find it worth while to look over varieties of Peach, Apple, Apricot, Olive, Plum, Prune, Pear, Orange, Lemon and other fruit trees; also good assortment of shade and ornamental stock.
Write for Catalog—Send at once list of your requirements for our estimate.
Kirkman Nurseries, Inc.
Main Office
TULARE AND N STREETS
FRESNO, CAL.

The Very Best None Excepted
Spray Pumps
Do not buy before investigating our claims.

Because—Greater Volume at 1-3 the Power Saved.
No Plungers or other Packings.
Positive Delivery—No Valves.
No Springs—No Cams.
Weighs but 60 pounds.
Good for Years of Service.
Can be attached to any outfit—small expense. State make and size.
We Build
Deep Well Pumps
Pressure, Priming and Vacuum Pumps, Blowers and Compressors.
⅓-½ Less Power
"We Pump Where Others Fail."
All Sold on Positive Guarantee.
WRITE TO-DAY
Baker-Hansen Mfg. Co.
744-758 Park Ave.,
East Oakland, Cal.

One Sack of Our Fertilizer Equivalent to One Ton of Manure.

Make Your Soil More Productive

Use the modern method of handling manure. Use GYPSUM in your stable—eliminates flies and retains the essential elements, usually lost in the form of gases. It counteracts black alkali and turns it into plant food. Corrects acidity in soil. Collects moisture from the air. Increases every crop—excellent for alfalfa. We also sell Blood Meal, Ground Phosphate Rock, etc. WRITE FOR QUOTATIONS.

STANDARD FERTILIZER COMPANY, Inc.
323 North Los Angeles Street, Los Angeles, Cal.

FOR THE "LAND'S SAKE"
BUY A
BOSTROM IMPROVED
FARM LEVEL
SHIPPING WEIGHT 15 LBS.
Price $15

which has TELESCOPE enabling you to read the Target over 400 yards away, and
TERRACE, DITCH, TILE DRAIN, IRRIGATE
your land properly, and save surveyor's fees. It is sold by up-to-date hardware and general merchants everywhere, and guaranteed to be the most
SIMPLE, ACCURATE, DURABLE AND COMPLETE
outfit ever made for all farm work. If your dealer hasn't one in stock, he will order for you from a nearby hardware jobber.
Write today for description of Level, and details of our MONEY BACK GUARANTEE.
BOSTROM-BRADY MANUFACTURING CO.
109 Madison Ave., Atlanta, Ga.

SECOND HAND PIPE
Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.
Largest pipe works in the West.
WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

Rhubarb for Profit
A FREE BOOK ON
Rhubarb Culture
Free for the asking; $1,000 profit. Now best time to plant.
J. B. Wagner, Pasadena, Cal.
The Rhubarb, Berry and Cactus Specialist

Fancy Alfalfa Seed
Vetch
Recleaned Barley Seed
Write for Prices and Samples
West Coast Seed House,
116-118 E. Seventh St.
LOS ANGELES - - - CAL.

Strawberries
YIELD $500 to $1200 per acre under the Kellogg sure-crop method. Our beautifully illustrated FREE BOOK gives the complete Kellogg Way and tells all about the great Kellogg plant farms in Oregon, Idaho and Michigan.
R. M. KELLOGG CO.
Box 265, THREE RIVERS, MICH.
FREE BOOK

When answering advertisements, please mention "Orchard and Farm."

California Dates

WITH California's wonderful development in horticulture it is not entirely a surprise to know that the Coachella and Imperial valleys, in the southeastern part of the State, promise to become one of the leading date sections of the world, or at all events that the date industry will become very extensive and profitable there. Date growing for some years has been largely on an experimental basis. As trees have come into bearing and methods adapted to California conditions found it is no more an experiment, but a proven fact. A great deal about varieties, methods and possibilities appears in a recent book on "Date Growing," by Paul B. Popenoe, Altadena. The book should be interesting to any one interested in California development and extremely valuable to any one contemplating date planting.

In soil and climate the Coachella and Imperial valleys are everything desirable for date growing, while farther east occasional summer rains make date production somewhat unsatisfactory or give poorer selection of varieties.

Although labor charges are high in California we have great advantages in the selection of the best varieties from the world over. Furthermore, the efficiency of our labor and methods is high and the quality of the output, especially in cleanness of pack, vastly surpasses that of other sections. Scientific methods of irrigation, ripening and pollination also give California a big advantage over every other part of the globe. The author of the book estimates profits of $1,000 per year from a bearing orchard, and, while offshoots are in demand for new plantings, a profit of $1,500, which is taking a very rosy view of the thing, for sure, though every report favors the progress of the industry.

To make a success of date growing it will be necessary to look after some parts of the work very carefully, with better results from applied knowledge than in almost any other branch of fruit growing. Apparently doing certain things right will mean double the crop that otherwise would be secured, nor does it seem difficult to learn what should be done.

Tree Planting

(Continued From Page Sixteen.)

but good results are secured on heavier soils that are deep and well drained or where dynamite has provided room for big root system. The peach likes good supplies of moisture. The neetarine, being a twin sister of the peach, has the same requirements.

Prune and Plum.—These can be grown on all good soils. Heavy and moderately heavy soils require the Myrabolan root, which is especially necessary on heavy and poorly drained soils. On light, well drained soils the peach root is preferred, and on rather dry soils the almond can be used. Best results come from a strong soil, a good, rich, deep, heavy loam being admirable. Plant 20 to 24 feet apart.

Pears grow on pear root, are planted from 18 to 24 feet apart and as a rule like heavy or moderately heavy soil. They thrive where most other fruits would be driven out by excess of water. Low lying lands and river bottoms provide typical pear locations, though pears do well elsewhere also.

Walnuts should be grown on black walnut or hybrid roots only and seedlings are vastly inferior to chosen varieties. A moderately heavy loam, deep and well drained, but with moisture in sufficient supply, is required.

KOPPEL SYSTEM
LAY A PORTABLE TRACK IN YOUR DRY YARD
PORTABLE TRACKS AND CARS
SAVE TIME LABOR AND MONEY

There's no system equal to the **KOPPEL.** It is the quickest and most economical way known to handle dried fruit. Our
NEW BOOKLET
goes into detail and explains why it will be to your advantage to use this money-saving system. No charge. Write NOW. Address
ORENSTEIN-ARTHUR KOPPEL CO.
Los Angeles: 120 South Los Angeles Street San Francisco: 231 Rialto Bldg.

HAWFERCO FERTILIZERS

Don't say you **can't** get better crops. You **can** if you go after that soil of yours. Don't be content with **fair** crops. Aim for **big** ones. Use a **good** fertilizer—a fertilizer that has been **tried** and found **to do** all that the makers claim for it.

You'll be surprised at the wonderful results **Hawferco Fertilizers** will bring. There is one for every purpose and each one is the very best of its kind.

We are the largest fertilizer manufacturers on the Pacific Coast. That means we do the biggest business. And doing the biggest business means that we satisfy the biggest majority of farmers.

COMMERCIAL FERTILIZER
BRANDS TRADE HAWFERCO MARK ARE THE BEST
HAWAIIAN FERTILIZER CO. LTD.
SAN FRANCISCO

Write Us Today for the Fertilizer You Need. Don't Put It Off. Write NOW.

HAWAIIAN FERTILIZER CO.
LTD.
250 CALIFORNIA STREET
SAN FRANCISCO

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

Problems of the Farmer

COULD sheep be profitably raised as a side line on a small alfalfa ranch in Southern California, and what breed would be best suited to these conditions?—W. W. C., Ontario.

A little flock of mutton sheep carefully and judiciously handled on any farm will return a handsome profit against the amount invested. Growing alfalfa lands in Southern California are more at a premium than they are in the central and northern parts of the State, but the early milk lamb is usually very high on the Los Angeles market and greatly overbalances the high price of alfalfa. A small flock of mutton sheep can be used as scavengers on most any farm, cleaning up the weeds along the fence sides and making a living on what the reapers and mowers have left.

If our subscriber will write Joseph E. Wing, Mechanicsburg, Ohio, and ask him to send the book named "The Winter Lamb," and follow its directions, he is sure to make a success of sheep raising on a small scale in Southern California.

One acre of alfalfa is supposed to carry one cow throughout the year. The same amount will carry ten ewes. The work of taking care of the ten ewes may differ materially from the care of the cow, but nevertheless the ewes must be handled on as high a plane of efficiency as the dairy cow, if success is to be attained.

What breed of mutton sheep should be used is for the subscriber himself to decide. Any of the mutton breeds, Shropshire, Hampshire, Southdown, Dorset, Oxford, properly handled can be made a success.

I WISH to borrow $600 to make improvements on my farm. Can you tell me if the agricultural bank that California capitalists were intending to organize could let me have this money at a low rate of interest?—F. M., Ono, Cal.

The agricultural bank you refer to has been organized and is doing business. However, it does business on a strictly competitive basis; that is, it gets all the interest on its money that the market will stand—in this case, 8 per cent per annum. Most loans also are for much larger sums than you desire, and it is improbable that a farmer who could not get money from his local banks would be much better off going elsewhere. There is an old saying, "If you want a thing done right, do it yourself," and while banks organized by business men to earn money by making loans on agricultural property are all right in their place, they will ask practically as much interest as other banks; so when farmers want to change the system of rural finance materially for the better they will have to organize and by co-operation do it for themselves. Waiting for others to give cheap money never is going to help.

CAN you tell me what office I should go to in order to secure some government land?—J. D., Mare Island.

Write to the United States General Land Office, San Francisco, for Circular No. 259, which tells the acreage of vacant public lands in every county of the United States that is open to entry; also a few particulars as to methods of securing such land. The circular does not, however, locate such lands, and you will have to consult maps, which can be secured there.

As a matter of fact, it is extremely difficult for a man to find a good piece of public land without help of some kind. It is also true that practically all good agricultural land has already been taken up, and little of value is left, unless it be off in the mountains somewhere far distant from civilization and transportation. If you want to locate on public land, possibly the best thing for you to do is to get in touch with some company that makes a business of dealing in public lands. Such companies may know of fairly good lands that have been overlooked.

We believe that if we were short of funds and not long on experience we would go to about the best part of California that was not developed, work for wages for a year for experience and earnings and try to get as good a piece of land there was on a shoestring—that is, next to nothing down and the remainder to be earned by the crops.

Recently the Forest Service has been making a systematic survey of the forests to decide once for all what lands were to become open to entry. Where such surveys have been made the above system can not be used, but a report is made to the Secretary of Agriculture and he sometime or other will open those lands to entry through the regular land office.

COULD you give me the name of any person who raises the yard-long bean or tell me where I could get some for seed—Mrs. G. H. T., Acampo.

They are not listed because they are not a standard variety and seldom grown. However, large seed companies whose names you will find in our advertising columns and who do a state-wide business keep such seed or will get some for you. The beans are well worth a trial in the kitchen garden. We cannot say for sure who will be growing them this year.

WILL you kindly advise me when alfalfa seed should be sown on my place near North Yakima? Which would be best as a sod in a young orchard, clover or alfalfa, and which produces the most humus?—G. W. K., Aberdeen, S. D.

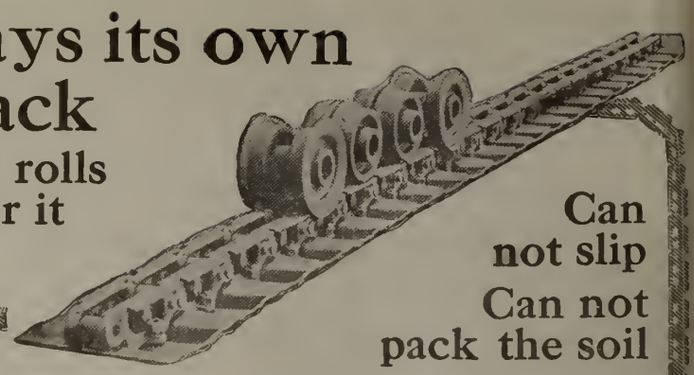
Answer by Prof. George Severance, College of Agriculture, Pullman, Washington — "Replying to above inquiry, I would advise that alfalfa be seeded in May and June, or in August and early September. The latter part of June, July, and the forepart of August is pretty warm for alfalfa. I believe that clover or alfalfa would be about equal in value for producing humus. Of course, the alfalfa produces somewhat larger roots and they go deeper into the soil, but I do not believe that the difference in the amount of humus that it would make is very great. Clover is much easier to get rid of than alfalfa. Alfalfa, on the other hand, will continue for several years, if one so desires, whereas clover must be reseeded every two or three years."

It will be understood that the above deals with Washington, not California conditions. Alfalfa would be far the better in most of California.—Editor.

IN your February number you give good advice about crop fertilizers, but omit one very valuable plant, the melilotus, or sweet clover. It is inferior to many legumes as feed and may be as a fertilizer, but it is so hardy that it will grow where others will not. This is especially true of the yellow flowered species (indica). It defies gophers, rabbits and birds, drouth, frost and heat, and will make a fair growth on very poor soil and improve it rapidly.—A. J. W., Alpine, Cal.

It is pleasing to have this good word spoken for sweet clover from the higher and more strenuous agricultural regions. Mention of it was neglected in speaking of cover crops, for in the milder winters of the greater part of California other legumes named are generally better, though sweet clover is so hardy that it goes all over the State, even when not wanted. Its value as a soil improver, that is, for gathering nitrogen from the air, is very high, and it is interesting to note that throughout the East, where alfalfa is not at home as it is in California, sweet clover is gaining high praise for its feeding value when cut early and made into hay. There also its adaptability to poor soils is highly spoken of.

Lays its own track and rolls over it



Can not slip
Can not pack the soil

Place a board over a mudhole. It will hold you up—if it's long enough and wide enough. The Caterpillar tracks hold the Caterpillar up—on any soil, wet or loose or sandy. It is all a question of area—traction surface.

Greater traction surface means better distribution of weight. Result--no mirring and *no soil packing* on any soil. A round wheel tractor's weight is all carried on a very small area. The Caterpillar's weight is carried on a very large area. It can never slip--pack--stall.

Notice the track spread out in the picture above. See the solid steel rails. Eight truck wheels, four on each side, carry the tractor's weight.

The 1914 60 h. p. Caterpillar is *guaranteed* to do the work of 32 good-sized horses. Every part is carefully inspected. From foundry to paint shop, nothing is overlooked that will prevent delays in the field. Forty-three years of manufacturing experience have taught us to be thorough.

CATERPILLAR
Reg. U. S. Pat. Off.

Caterpillar Service Department

Expert Caterpillar engineers have been given automobiles and districts to cover. They will visit each Caterpillar in that territory. They will offer advice, instruct you or your engineer in Caterpillar operation and construction. This advice costs you nothing whatever, after you become a Caterpillar owner.

The Caterpillar is built in three sizes, 30, 60 and 75-h. p. We furnish nearly everything for the farm—plows, disc harrows, harvesters and scrapers—all strongly built for tractor work.

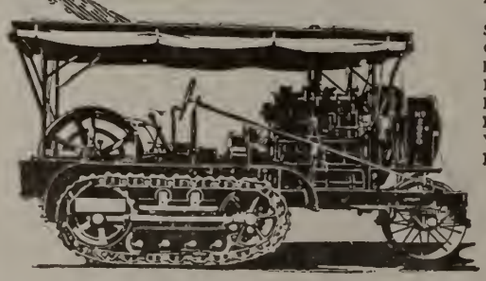
Send to the nearest branch for bulletin F 2 describing 1914 Caterpillar construction in detail.

The Holt Manufacturing Co.

BRANCHES

Stockton, Cal. San Francisco, Cal. Los Angeles, Cal.

Portland, Or., 617 Lumberman's Bldg.
Spokane, Wash.
Calgary, Alta.
Fargo, N. D.
Dallas, Texas.
Peoria, Ill.
New Orleans, La.
Wichita, Kansas.
New York, N. Y. 50 Church Street.



Sure Death to Gophers Squirrels

NEWTON'S GOPHER AND SQUIRREL KILLER No. 6

Exterminates Gophers, Squirrels, or any vermin in holes or caves where the poisonous gases can be confined.

GETS THEM EVERY TIME—It produces 4,000 cubic feet of carbon-bisulphide gas, which is sure death to any animal forced to breathe it. It burns without disturbing the ground, and the poisonous gas penetrates to every part of the burrow. It can also be used for fumigating.

ABSOLUTELY SAFE TO HANDLE—Anyone can hold the cartridge without the slightest danger of being injured. It is the most inexpensive, the most effective, the surest, safest and easiest.

$5 per gross. Sent by Express Collect, or by Parcel Post upon receipt of postage.

NEWTON'S CALIFORNIA FIREWORKS CO.
249 Front Street, San Francisco, Cal.

Handling and Marketing Berries

—By M. J. Moniz, Manager of Barlow Ranch, Sebastopol, California.—

THE handling of berries for market is a delicate and particular process. They must be picked at the proper time, kept in a shady, cool place, and if possible hauled off before the hottest part of the day starts in.

Harvesting Lamton Berries—Filled Trays Are Kept in the Shade Until Gathered.

For Eastern and distant points they are shipped in iced refrigerator cars; before being placed in the cars they are put in a pre-cooler and left remain from four to five hours, so they can cool off slowly. By doing this they will keep in better condition than by placing them immediately in the iced cars just after leaving the field.

Berries must be hauled on spring wagons. Avoid driving fast, especially on rough roads. Keep the fruit covered up with a canvas to avoid dust. In loading and unloading be careful not to jolt or jar the crates and cases, or turn them higher on one end.

For canning purposes a good many make a mistake by putting almost anything in the trays simply because it is for the cannery.

The idea is this: If the canner receives good fruit he can put up A No. 1 grade of canned goods and obtain more for it, and therefore he can afford to pay the grower more for his product; but on the other hand if he receives poor stuff, full of stems, leaves, dust, etc., he cannot put up a good grade of fruit and simply sells it for a low price, and the result is that he has to pay the grower a low price for his berries also. Thus it is better to deliver a good article and receive the price it commands.

The marketing facilities nowadays are much better than they were years ago. At that time the growers had to depend solely upon the canners to use their entire output, receiving prices that hardly justified growing the product.

To-day our berries are handled through a Berry Growers' Association which has been in operation for five years, and during that time new Eastern markets, as well as local ones, have been developed, leaving more distributing channels in which to dispose of the crop.

A large portion of the berries are shipped East in iced cars as far as Chicago, besides many other points, being sometimes five and six days on the way, and the result is that good profits are obtained for them in return.

In order to obtain all these advantages, careful attention must be paid to proper cultivation, pruning, picking and all the other little details that should be carried out right.

Through the co-operation of the association each farmer pays the association a small percentage for selling his crop, and the returns are pro rated later in the season accordingly.

In this manner the grower has more than one outlet for his berries, for he now gets the advantage of the cannery, Eastern and local retail trade, and a better and more satisfactory price is being obtained for the berries from all.

Painting Orchard Heaters.

The Citrus Protective League has issued a circular letter urging fruit-growers to care for their orchard heaters so that they will not be quickly destroyed by rust, as most are in the way of being, through neglect. By neglect the life of an orchard heater is reduced from ten to two years, and there is now lost unnecessarily $400,000 to $500,000 per year in this way. Covering with asphaltum paint, according to a formula given by C. C. Teague, manager of the Limoneria Company of Santa Paula, as follows, will protect the heaters:

"We take asphaltum and place it in kettles and melt it, then remove it from the fire, and after it has stopped boiling, dilute it in the proportion of one gallon of stove distillate to ten pounds of asphaltum. This stock mixture is then put in barrels ready for use. If it proves too thick to apply well with brushes, it can be diluted with engine distillate or gasoline to the required consistency. The paint herein described costs less than ten cents per gallon. We have dipped all of our pots in such paint before putting them out in the field, and if it is necessary to burn them and it melts off the protecting paint, we send men around with pails and brushes to touch them up where it is needed."

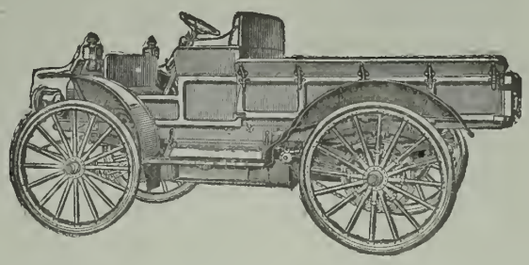
The deciduous men are as negligent as citrus growers and will do well to follow the advice given.

Keep Hogs Healthy

Young hogs should not be given crowded quarters. In order to keep them in a healthy, growing condition, a proper diet should be fed. Healthy individuals possess a certain amount of power to resist disease, and this plays no small part in preventing it.

We need pasteurized swill barrels, as well as pasteurized milk.

International Harvester Motor Trucks



THE I H C LINE
GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Blowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Combination,
Peg and Spring-Tooth, and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

"I HAVE used your International motor truck daily over a route eighty miles long, through winter and summer, for the last four years, and have never missed a trip," writes one man.

Service such as this man got would add much to the profits of your fruit business, by handling your fruits rapidly at the right moment, and cutting down your general hauling expenses. An International motor truck would give you such service. Many fruit growers, realizing the advantages and economies to be secured, have long been successfully using the light running, durable International motor truck.

The solid tires cut down tire troubles. The motor is simple and has plenty of power for emergencies. The brakes are safe on any hill. The ignition system is of the best. One lever controls the car. The International is built to save you money.

Let us show you all that an International motor truck will do for you. Drop a card today for catalogues and full information to the

International Harvester Company of America
(Incorporated)
Denver—Helena—Portland—Spokane—Salt Lake City—San Francisco
Champion Deering McCormick Milwaukee Osborne Plano

ANNOUNCEMENT

To the People of the Pacific Coast

One of the most unusual opportunities for the people of the Pacific Coast to become shareholders in a firmly established and rapidly growing business firm in the West, is now drawing to a close.

Out of an authorized issue of $1,000,000 of the 8% Guaranteed, Non-Assessable, Preferred Stock of The Owl Drug Company, but $114,500 now remains unsold.

Practically nine-tenths of this opportunity opened to careful investors has now been taken up, only a little more than one-tenth of this exceptional guaranteed stock may still be secured by quick action.

The Owl Drug Company does the largest per capita drug business of any company in the United States. Its net earnings for 1912 were **seven times greater** than the sum necessary to pay its preferred stockholders the 8 per cent guaranteed interest on their holdings. The Owl Drug Company has no bonded indebtedness and for 20 years has enjoyed the distinction of never having missed a dividend day. Its total cash sales during 1913 were over $4,000,000.

The Owl Drug Company began business in 1892, operating its first stores in San Francisco. It now has 20 retail stores in San Francisco, Oakland, Sacramento, Los Angeles, San Diego, Portland, Ore.; Spokane and Seattle, Wash. In addition it does the greatest manufacturing drug business of any company west of New York. 8% dividends on its stock are paid on July 1st and January 1st of each year.

If you are seeking a safe, sure, sound investment and desire to become a shareholder in this business, prompt action on your part will enable you to secure your part of this very limited block still on the market at the par value of $100 per share.

Telephone, write or call at our Home Office, 611 Mission Street, San Francisco.

February 11, 1914.

How to Grow Sweet Peas

THE sweetpea is the most beautiful and fragrant of flowers. It lends grace to every occasion. There is no flower which responds more readily to careful treatment. Your garden is not complete without sweetpeas.

Select a plot which is partly shaded during the day and which has a background, such as a fence, shrubbery, a shed, etc. The plot should be oblong in shape, about two feet wide and as long as desired. Sunlight will have its best effect if the plot lies north and south.

Work well rotted barnyard manure and bone meal deep into the soil.

Sweetpeas like a soil which is not too light or too warm. The seeds do best if they are planted in November and December, although planting time may continue into May.

If the rains have not softened the proposed seed bed the ground must be thoroughly sprinkled two or three days before working.

After making a careful selection of seeds from a seedman's catalogue, soak them, after receiving, twenty-four hours before sowing. Dig a trench about five inches deep and sow the seeds about one inch apart. Cover with one inch of dirt, pack the soil carefully and leave the rest of the trench open.

As the young plants come up, thin them to about one foot apart. The plants will not produce beautiful flowers if they are crowded. Add soil about the young plants gradually, until the trench is filled.

When the plants are large enough, furnish them with something to climb upon. This may be twigs stuck in the ground, a string frame or a wire netting. The frame should be at least five feet high.

After each rain or irrigation with a hose, cultivate the soil with a hoe to the depth of two or three inches. Cultivate whenever a crust forms on the surface of the soil.

The plants at a height of two or three feet need much water. It is much better to dig a trench close to the row and irrigate thoroughly twice a week, than to sprinkle each evening. At this stage of growth, train any young plants that are out of position to the netting.

The brilliancy and beauty of a flower depend upon healthy growth due to proper food conditions and excellent care. Soak a sackful of cow manure in a tub of water. Add a quart of this liquid to six gallons of water and apply close to the sweetpea row, but not on the vines, once or twice a week. Irrigate first with pure water. Pick the blossoms regularly. Do not let them go to seed. Long sprays of sweetpeas in glass bowls make an attractive display.

To keep insects, such as the red spider, away from the vines, spray now and then with the hose held close. This treatment will wash off unwelcome visitors. If the red spiders should become too numerous, spray with whale-oil soap or "black root," a tobacco preparation.

By plucking off many of the flower buds before they open, the food supply may be forced into the remaining blossoms, and thus the plant may be made to grow extra fine flowers.

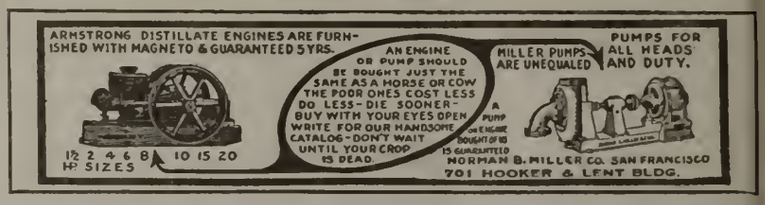
Oriental Farming

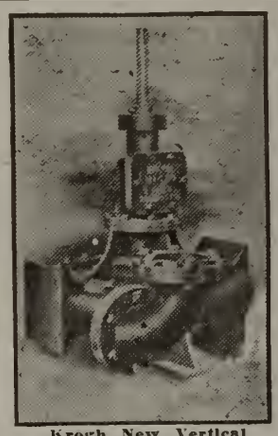
CALIFORNIA is the most interested of all the States in the problem of the yellow races, and persons who are interested in various methods of agriculture and the future of our civilization will find very valuable a book by Professor F. H. King of Wisconsin on "Farmers of Forty Centuries." The subject may not be interesting to a man thinking of making a living for the time being, but it deals with fundamental facts for the man who thinks of the distant future. The white race has had new land throughout history, and has worn out land most of the time, especially in America, so that it has now no good new land left, and old land is decreasing in fertility. The Chinese, Japanese and Koreans have been crowded together on the same land for thousands of years, the countries are densely populated, and yet the author of the book states that the people are almost universally well fed in appearance and crops that suffer from lack of plant food are almost unknown.

The reason is careful attention to detail and the return of every bit of plant food to the soil that there is. The modern sewer systems, unknown in China, would poison all streams if they did exist, and starve the nation in a short time. Yet in certain ways things are much cleaner than here, inasmuch as flies, which breed in filth, find so little filth to breed in that they are much more abundant here than there.

It is to be hoped that Americans will never have to come to the Oriental standard of living, but it is a matter of wonder, after reading this book, how far the Westerner must approach their methods and standards of working if the present civilization is to endure. The root of the matter is in keeping up the fertility of the soil by fertilization and plowing under vegetation, a thing toward which American agriculture is strongly tending to-day.

MARTINEZ NURSERY
ESTABLISHED 1884.
Offers the following varieties in strictly No. 1 Trees; 25,000 Bartlett Pear, 10,000 Apple (leading varieties), Autumn and Winter Pear, also Plum, Prune, Peach, Apricot and Almond Trees, Grape Vines, Ornamentals, etc. Price List on application.
THOS. S. DUANE, Prop.
Martinez, Cal.




Krogh New Vertical Water Balanced Pump

KROGH'S NEW VERTICAL PUMP

The Krogh New Water Balanced Vertical Pump contains many new and valuable improvements, same being fully explained in our Bulletin, R-10, which will be mailed upon request.

We have a branch in Los Angeles at 206 N. LOS ANGELES STREET

The pump can be seen in operation at our place of business.

KROGH MANUFACTURING CO.
149 Beale Street, San Francisco

MORSE'S Garden Guide for 1914

Sent Free to Any Address

This book of garden knowledge will prove to be invaluable to those interested in flowers, vegetables, seeds, plants or trees. The information and instructions given are clearly and concisely written and the many illustrations throughout the book will give the reader a perfect idea of what he is ordering. We have spared neither time nor money in the preparation of this Garden Guide and we firmly believe it is the most authentic work on this subject ever issued. It is yours for the asking.

There's Never a Doubt About the Seeds, Trees, or Plants You Buy from C. C. Morse & Co.

We have become justly noted for the quality and reliability of our products. We endeavor to maintain the highest standard in everything we grow. That we have given value received to our thousands of patrons in the West is proven by the fact that we are the largest seed dealers on the Pacific Coast.

All Good Seed Stores Sell Our Standard Varieties

Headquarters for alfalfa, grasses, clovers, etc. Correspondence invited.

Write NOW for Morse's 1914 Garden Guide.

C. C. MORSE & CO.
48 Jackson Street San Francisco

Fundamentals of Alfalfa Planting

ALTHOUGH alfalfa has been planted with fair success every month of the year in California, the two best seasons for planting are spring and fall, for then both moisture and temperature conditions are satisfactory. Winter's cold will check the growth of tender alfalfa at the best of it, and often frosts will kill the newly sprouted plants outright. Also, summer's heat will bake the soil and burn the plants. Therefore, as a rule, to get a good stand a person must plant early enough in the fall for the alfalfa to harden up against frosts, or in the spring after killing frosts are past and there is warmth enough to make rapid growth.

Fall planting is dependent largely upon having early rains, so spring planting, generally speaking, is the more satisfactory and common. The excellent rains and fine promises for the coming season make this year one of our greatest for an increase in alfalfa acreage. The suggestions given here are largely called forth by common questions of prospective alfalfa growers and, doubtless, will be interesting to many persons putting in alfalfa this spring.

For varieties a person can usually do no better than to use the common California, or Chilean, alfalfa. Only Peruvian alfalfa is considered better by those who have given all varieties a fair trial, and that is so little better that there is no special advantage in having it. Arabian alfalfa makes wonderful hay, but is too delicate and short lived to be liked. Most other varieties are better suited for cold climates than for California, and their use cannot be advised except as an experiment.

When it come to the seed itself there is a big tale to tell. Alfalfa seed is great for carrying with it Russian thistle, dodder and numerous other weed seeds that will ruin a stand and demoralize the income. There is not a point in alfalfa growing where money or care can be better spent than in seed selection And just as important as weeds is the fact of seed vitality. Well filled seeds that will sprout 98 per cent are many times better in the yield of hay than poor seed of which only 60 or 75 per cent will sprout The Agricultural Experiment Station at Berkeley makes special work of testing alfalfa seed for farmers and the most successful ones have their seed tested there. At all events only the best seed from the best dealers ought ever to be used

There is no question about the desirability of a thorough job of leveling and land preparation, so that needs no attention here. A matter that gives room for improvement though, is the method of seeding Here is room for saving money and doing a good job.

Broadcasting is the probably commonest method, whether done by hand or by a seeder The amount per acre generally advised is 20 pounds, though it can run down to 12 pounds by broadcasting when a good job is done. Drilling in the seed is the alternate method.

Broadcasting in any way is in certain respects wasteful. You cannot get an absolutely even distribution and so enough has to be used to make a satisfactory stand where the least is applied. That means an excess where the seed lies thickest, and an excess is unprofitable through waste and through crowding of plants. The ideal for production is to have each plant where it has all the soil needed for its own thrift without having any waste soil between plants.

Broadcasting is wasteful also because a large percentage of the seeds are either too deep or too close to the surface for good germination and only a portion sprout properly. Drilling saves by giving an evener distribution for one thing and for putting the seeds at just the right depth for another. On soil that will run together after a rain, however, a crust may form and make replanting necessary if weather conditions are unfavorable and the land poorly handled, but on sandy soil or where the right drill and right methods are used drilling is very advisable. As little as five pounds per acre can sometimes be used with a drill to get the best kind of a stand and even less would be used than this if an even distribution and germination were possible. In fact, alfalfa seed is so small, that if each seed were properly placed and made a plant, two pounds of seed would be more than enough for an acre of land. It would not take a very great acreage to make a drill pay for itself through the saving in seed.

The proposition of innoculation is relatively unimportant here in California, though back East, where alfalfa does not make itself at home naturally, it is vital. Some California authorities say that often it is well to innoculate alfalfa to be sure that the bacteria are there, using either commercial preparations or soil from an old alfalfa field. A fact upon which a man can be absolutely certain in California is that wherever bur clover or any other native or introduced clover is growing innoculation is not needed and the alfalfa will have all the bacteria of the right kind that it wants. Alfalfa has been known more often than not to grow vigorously from the start on good soil where clover of any kind apparently had never been grown. However, on soil not of the best, where clover does not grow naturally and would if the soil was right, innoculation with bacteria is worth while.

Scraps for Chickens

Don't throw your table scraps in the garbage can, but feed them to a small flock of hens. Turn everything through a food chopper; toast all stale bread in the oven and mix enough toast to make a dry mash. To feed this I get a medium-sized flower pot, place a round stick through the hole, push it into the ground and put the food in the pot. There is no waste, for the fowls cannot scratch it out, therefore no bad smelling yards, and the hens are healthy.

I keep a dozen hens on a place 14x14. They average three dozen eggs per week. I feed a quart of wheat in the evening and the eggs cost about 8 cents per dozen; besides, we have a nice fat home-raised hen to eat occasionally.

In February I get a setting of eggs and have pullets laying in November We keep no roosters. And cut down the high cost of living.—Mrs. J. C. P., San Francisco.

How Hawks Kill Chickens

Did you ever see a hawk kill a chicken? The real chicken hawk weighs about a pound and is of the same specie as the sparrow-hawk, looks like one, though somewhat bigger. It flies at a rapid speed and strikes with its back hooked claws. The chicken is usually hit under the eye and is knocked out instantly; the hawk then returns and either eats it where it falls or carries it a short distance.

One day I saw the chickens run for the yard. I ran toward a hawk that struck one of them. As I picked up the chicken the hawk killed another while I was trying to frighten it away. The next day the hawk got in range of my gun.—A. R., Ripon.

For Over Three Generations

Old Reliable Peter Schuttler

has been the "Standard Wagon of the World" without a competitor. Its superior quality, greater durability and satisfactory service have won its enviable reputation.

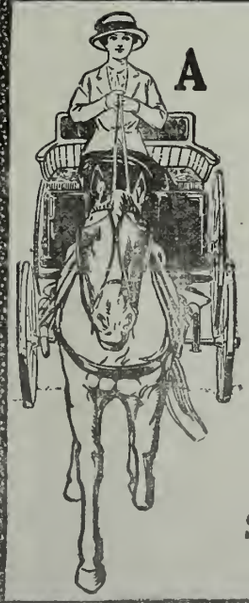
Peter Schuttler Roller Bearing Wagons Run ⅓ Lighter

PETER SCHUTTLER CO., Chicago
The World's Greatest Wagon Factory Established 1848

"A product without a peer"

APOLLO BEST BLOOM GALVANIZED SHEETS

Unexcelled for Culverts, Tanks, Cisterns, Roofing, Siding, and all forms of sheet metal work. APOLLO Roofing Products give lasting service, and are sold by weight. Send for "Better Buildings" booklet.
AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh



A Smart Turnout

depends largely on the harness. To keep a harness bright and new, it should be treated with

EUREKA HARNESS OIL

EUREKA also lengthens the life of the harness by keeping it soft and pliable.

Ask for EUREKA HARNESS OIL. Dealers everywhere.

Standard Oil Company (CALIFORNIA) SAN FRANCISCO

The Marlin "Pump" Action .22 Cal. REPEATING RIFLE

You can buy no better gun for target work and all small game up to 200 yards.

Without change of mechanism it handles .22 short, long or long-rifle cartridges perfectly. The deep Ballard rifling develops maximum power and accuracy and adds years to the life of rifles.

No. 20 rifle with plain finish, 15 or 25 shots, $11.50. No. 29 rifle, $9.25.

The solid top is protection from defective cartridges—prevents powder and gases from being blown back. The side ejection never lets ejected shells spoil your bead and allows quick, accurate repeat shots. With simple take-down construction, removable action parts,—least parts of any .22—it is the quickest and easiest to clean. Just the gun you want! Ask any gun dealer.

The 128 page Marlin catalog will help you decide what rifle best suits your individual desires. Send 3 stamps for it today.

The Marlin Firearms Co. 116 Willow Street New Haven, Conn.

Potatoes for Profit

By Ernest A. Maris, Sebastopol

FEW, if any, field corps give better return per acre than potatoes, if planted under the right conditions and given proper care. But it must be planted in the best of soil to obtain quality as well as quantity. Quality means smooth skin, proper shape, freedom from scab or disease, plenty of starch for keeping well and the true potato flavor.

These are what count, especially in a season like that of two years ago. I sold my whole crop free on board the cars 2½ miles away for $1 per 100 lbs., whilst the best my neighbors could get was from 75c to 50c for the same variety.

After you decide where to plant, the next move is to get the right variety of potato for the soil, whether early or late.

Now comes seed selection. Familiarize yourself with your choice, so that you recognize the variety the moment you see it. Unless you do this, you are liable to get mixed seed. One such potato cut up for seed and planted may give you at digging time from 25 to 50 lbs. of an unsaleable article. Moreover, when you can absolutely guarantee your seed pure and true to name you can command high prices for seed purposes.

In selecting seed, whether from your own stock or not, take only well shaped, good sized tubers, the very best you can get is none too good.

The advocates for and against each way of cutting seed potatoes are many, each believes his way the best. The Government reports point to the quartered potato as giving the best net returns and I have by careful test found almost identical results. Later tests in larger or field practice, with a number of varieties, led me to the following conclusions, which actual results proved correct.

If you must use the seed end of your potato, cut it down so as to leave half of the eyes on each piece. For extra early results use seed end, only planting about two inches deep on warm, well drained land.

For main crop with extra large tubers cut the seed end off and throw it away.

If the seed potato is not over 2½ inches long, cut it in two through the seed end; if larger cut it into three, four or more pieces with at least two good eyes on each piece, and be sure they are live eyes, not blind ones. The young shoots or sprouts, you must remember, feed on this cutting till they send out their own roots so that the larger the seed piece the more food the sprout will have, and the more vigorous it will be.

Do not hurry or scamp the operation of cutting seed. Far more depends on it than you may realize.

The mechanical condition of the soil has much to do with the success or failure of your crop. Plow, if possible, deeply in the fall. If you cannot, plow now; then cross plow as deep as you can go, about two to three weeks before planting, but in neither case harrow it. Broadcast a quickly available fertilizer before this plowing, as the potato is a very heavy feeder.

A ton of potatoes takes out of the soil 92 lbs. potash, 25 lbs. of phosphoric acid and 57 lbs. of nitrogen, so it is clear that on the majority of our farm lands fertilization is necessary. When ready to plant, allowing 21 days for the young plants to come up, harrow the ground well, and using a 10-inch plow, drop your seed pieces 30 inches apart along the bottom of every third furrow; the next round covers them and so on across the field. For early potatoes plow three inches deep, for main and late crops five inches deep.

Do not harrow the planted ground unless absolutely necessary, but if weeds come up badly before the potatoes, or if it rains and a crust forms, harrow with the teeth slanting backward.

The above method is the usual way of planting, but in my latest planting I have done very differently and had much better results at less cost.

Plow twice as above, then mark and cross mark as if for corn, only making 33-inch rows. Buy a hand potato planter costing $1.25, and having adjusted it to the required depth, plant at each cross mark.

You save one plowing and one man dropping; you can cover more ground in a day; you can cultivate both ways; you save three-fourths of the cost of hoeing; you know where each hill is; you have no mashed seed pieces, and you have no vacant spaces owing to the horse kicking two pieces together, resulting in a bunch of little potatoes.

Above all, the plants come up much more evenly, and by careful comparison and measurement I have always had from 90 per cent to 95 per cent of a stand, as against 70 per cent to 85 per cent by the old way.

As soon as you can see the rows cultivate, first using narrow shovels. Set the tool full 8 inches narrow and go twice in a row, keeping one side of the cultivator close up to the plants on one side and then on the other. Now hoe your crop and if you do not see the young shoots where they should be, hunt for and uncover them carefully.

In the second cultivation go deep, but not too close to the rows. The third time put wider shovels on and hill up slightly, but never very much.

Stop all work as soon as the field is in blossom. After that you will cut the feeder roots and damage many little potatoes on the ends of the runners.

If you intend to dig for early market, you can do so as soon as the tops show yellow. Dig carefully, handle them lightly, as few times as possible. After one or two hours' exposure to the air to harden the skin somewhat, pick the potatoes up and place them in boxes holding about 60 lbs. A coal oil can with one side taken off and the top put back on is just what you want.

For main crop let the tops be dead and dry; if a rain comes before digging, after they are ripe, your tubers will keep much better. Use clean sacks and give honest packing with a few nice ones on top, to get top prices.

The soil best adapted to the potato is a light or sandy loam, with a subsoil that holds moisture well; a moist climate not too warm is the ideal one for this vegetable. The celebrated Salinas Burbank, always quoted in California at a higher price than any other, is grown on rolling hills near the coast, of just such soil as I have described.

Potatoes grown on low, flat lands are usually watery, lacking in starch and of poor flavor.

The standard varieties of potatoes that are recognized on the market, I name below. Taking the Burbank at 100, the figures give my returns per acre here at Sebastopol:

Burbank, late winter, 100; Late Rose, same as White Rose, late winter, 120; American Wonder, both late and early, according to when you plant it, 125; Uncle Sam, early winter, matures quickly, 85; Pride of Ireland, late, 100; Early Rose, very early, 80; Prize Taker, also called Prize Winner and Early Summer, 90.

Rex "THE STANDARD" SPRAY CHEMICALS

Made by the first company to manufacture spray material in a commercial way. REX materials make good because back of them is both experience and success with spray materials. REX chemicals are compounded in California for California conditions. The first Lime Sulphur solution was a REX solution, and for every kind of spraying REX GOODS are established as "STANDARD."

"THERE IS A REX FOR EVERY ORCHARD TROUBLE"

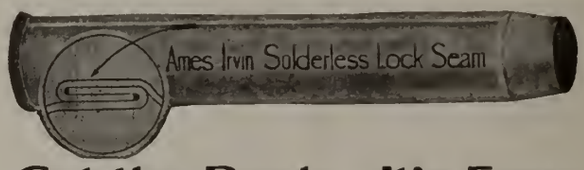
REX Lime Sulphur, Miscible Oils and Phenols, Arsenates and Sulphides are proven for every need. Let us send you our Bulletin on "How to Raise Better Fruit and Plenty of It." Free on request. Address

CALIFORNIA REX SPRAY CO. BENICIA, CAL.

The Practical Story of Farm Irrigation

In some cases as high as 4 per cent of your water per mile for irrigation is lost through seepage. Added to this the loss through evaporation. Each gallon lost represents a loss of money through the futile power expended. If you buy your water, the loss in money is even more direct. Too much money is wasted in irrigation ditches—they cost too much to maintain; they consume too much soil area; they are too expensive to install. The cost of water for irrigation has risen 300 per cent since 1902.

Irrigation pipe costs but little. The cost of installation is low; no seepage or evaporation is possible; the maintenance is nil; no grading of land is necessary, as it conveys water on uneven land as well as level land.



Get the Book. It's Free

All these are facts contained in greater detail in our free book about irrigation: its value and problems; how to use it and where. There also will be found vital information about water—the importance of water—its functions—capillary attraction—seepage—when to irrigate—where not to irrigate.

It tells about the difference in irrigation pipes—why Ames-Irvin Lock seam pipe is constructed without rivets or solder. Why and how the best results have been produced by it. Send for it to-day. A postcard addressed to Department O. F. will bring it.

AMES-IRWIN COMPANY
8TH AND IRWIN STREETS - - SAN FRANCISCO, CAL.

Imperial Walking Plows

"THE PLOW THAT HAS BEEN COPIED BUT NEVER DUPLICATED"

"I tell you, sir, 'The Imperial' is the best plow in the world. No mistake—and you know it."

Any wearing part of this plow, either mouldboard, landside or share, can be changed from steel to chilled iron or vice versa. Parts are also interchangeable on wood or steel beam plows. Mouldboards are so shaped that furrows are lapped in perfect regularity without a break. A minimum of friction insures light draft.

An IMPERIAL WALKING PLOW cannot be strained out of shape. Any wearing part can be replaced without disarranging others.

If you are interested, write for catalogue.

H. C. SHAW COMPANY
Wholesale Distributers
52 N. California Street
STOCKTON, CAL.

"Orchard and Farm" urges immediate notification of this office if there is any dissatisfaction over the purchase of goods from advertisers whose announcements appear in this publication.

Official Report on Rural Credits

AN official report has been made by the American Commission on rural c[illegible]its which has as its object the [illegible]g out of methods by which the A[illegible]an farmer may secure money for farm improvements and carry on his financial dealings at low cost and with the greatest possible convenience. This report is issued as a Senate document and is the first definite statement of the steps which are to be taken to obtain the above objects. It remains for Congress to act on these suggestions and for the people to see that their individual States undertake legislation that will help out in every way possible.

This report deals only with the means of obtaining money on long-time loans—that is, for farm purchase and improvements. Reports on methods for securing short-term loans, for crop movement and farm work generally will follow and set forth a different and separate plan entirely. Persons who are greatly interested in rural finance should by all means write to their Senators for this report, in order to study it in detail. What is given here is just a simple statement of the fundamentals of the plan proposed.

The starting point is the organization of "farm-land banks" along distinct lines from banks now, whose main object shall be to lend money on farm mortgages. These banks are to be under definite government supervision, but no financial aid will be given them by the government. The commission strongly advises against any financial aid by the government, as this is entirely unnecessary and undesirable.

These banks must have a capital of at least $10,000 and can increase their capital to any desired amount, or reduce it to the $10,000 minimum. They can lend money on farm mortgages up to fifteen times their capital stock, and are permitted as well to do a general banking business up to a certain limited extent. They may act as depositories for Postal Savings Funds and other public money and accept deposits up to one half of capital from individuals, firms and corporations. The main business, however, is to provide money on farm mortgages.

This money is largely secured from bonds issued against mortgages. For instance, if the bank takes in $50,000 worth of farm mortgages, it sells $50,000 in bonds, and if it has $200,000 worth of mortgages, it sells $200,000 worth of bonds. The bonds and mortgages are to offset one another, and when mortgages are paid off, bonds to equal them must be secured by either the bank or the borrower who is discharging his debt. The bonds do not represent definite mortgages, although all mortgages to be paid off during a certain period have bonds which will mature during that period.

Mortgages are suggested as extending over a long period of time, not longer than 35 years, and they may be paid off gradually, principal and interest together, that is, on an amortization basis. Thus, if a farmer borrows money at six per cent, he will pay perhaps seven per cent, but in so doing decrease his debt until it is extinguished. After five or more years he may, as was suggested, pay off the whole mortgage at once, if he so desires, but bonds corresponding to the amount of his mortgage must be secured, so that the bank will not pay interest on bonds without having an income to offset it.

The interest on mortgages is to be no greater than one per cent more than is paid for the bonds. This difference is required to run the business. For example, bonds are sold, say, to bear interest at five per cent. The bank will charge six per cent. Or, if higher or lower interest is paid on the bonds, the borrower will pay higher or lower interest also.

This system should make a great cut in the cost of money to the farmer. For example, municipal bonds often sell readily when the rate of interest is only four and five per cent because buyers think their money is safe. Farm land bank bonds ought to be one of the safest kinds of bonds issued and after they get to be a recognized investment they should sell at prices which should give the farmer money at five to seven per cent without difficulty. The system is excellent.

Several requirements are made to insure their safety and to make them a good investment. For one thing the land must be worth twice the amount borrowed upon it. Again, the money must be spent on the property, not elsewhere. Then, if one mortgage is bad, the bonds are insured by all the other mortgages held by the bank. Furthermore, the bonds are guaranteed, not only by the mortgages, but by the capital and and surplus, and the property of stockholders up to the amount of their capital. Likewise, the business is to be conducted under careful federal regulation.

There are yet several great requirements essential for the greatest success of this system which are beyond the power of Congres to deal with. Both have to be done by the individual States, and both should me done on their own merits. One is the simplifying guarantee by the State of land titles.

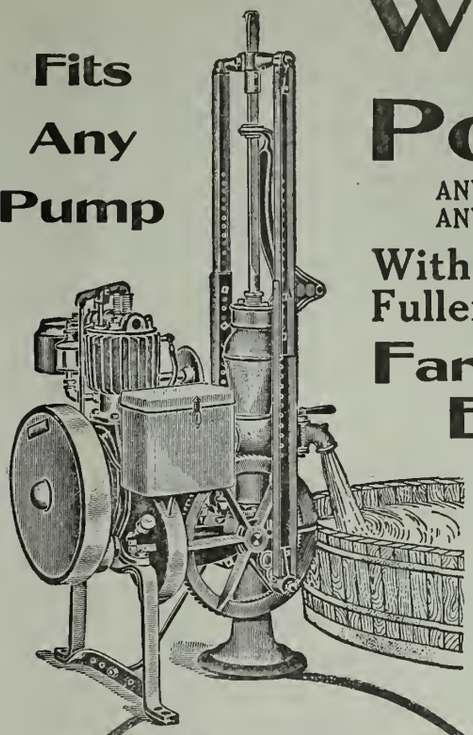
Another requirement for fair interest rates on farm mortgages is better taxation methods. There should be no double taxation, as there is now in many States, one tax on the land and another on mortgages. When a farm pays taxes, as all land does, no taxes (the commission asserts) should be placed on the mortgage. It is bad enough to have to pay full taxes on land and interest on money borrowed without having to pay taxes on the mortgage too. Thus, for all that Congress can do, it is essential that the State Legislatures also simplify State laws in order that full benefits come from the proposed plan. In fact, as the commission suggests, it would in some ways be better for the individual States to adopt this system of State banks rather than relying on National farm-land banks to provide cheaper money for farmers.

The proposed system, to summarize it in outline again, requires the formation of banks in rural districts to loan money on long term farm mortgages (in addition to some short term loans also), the money to be largely secured by the issuance of bonds, and the mortgages to be paid off gradually. Details can be seen in the report, which contains draft of proposed law.

The secretary of the commission in a letter suggests careful consideration of the report and that any criticisms and suggestions by farmers or farm press be made, so that Congress will give the matter the most careful attention and consideration possible, and get out the best possible law.

As with every other good measure, it rests mostly with the people whether or not they get the laws that they want. After they get the right action by Congress in this case it rests with the people to get desired revision of State laws, and after the opportunity is offered it rests with the people themselves to form these banks, and to put the system so into operation that agricultural finance for the first time will be on a fair and sensible basis. Orchard and Farm is in the fight to help.

Fits Any Pump



Water and Power

ANYWHERE AND ANYTIME NEEDED

With the Famous Fuller & Johnson Farm Pump Engine

Here's a pump engine that is in successful use and in popular demand from Maine to California and from Florida to British Columbia. It is the lowest priced pump of its kind on the market and with ordinary care will last a lifetime without having to be repaired. Its use is not confined to pumping only. It is equally good as a general utility engine.

Read What This Engine Can Do

The famous Fuller & Johnson Farm Pump Engine is a complete independent power plant. It can be attached directly to any pump, without extra fittings, special platform or foundations. Pumps from 250 to 2,450 gallons of water per hour. It is supplied with a pulley to run a churn, separator, fanning mill, corn sheller, feed grinder, washing machine, wringer, sprayer or any other light machinery that is operated by hand power.

It is absolutely guaranteed to be perfect in material and construction and to do everything that the makers claim it will. There are no extra parts to buy. It comes complete ready for instant use. A ten-year-old child can connect and run it. Write for booklet NOW while this is before you.

Pacific Hardware and Steel Co.

Pacific Coast Distributers. Department O San Francisco.

Portland

Los Angeles San Diego

Important

We have just published an interesting booklet which clearly illustrates and describes the many uses to which the Farm Pump Engine can be put and the many instances where it will save its owner valuable time and a lot of unnecessary work. Write for this booklet now.

We are establishing agencies for The Farm Pump Engine throughout the Pacific Coast. Full particulars to those interested.

What to Do for Blackhead

—By Prof. M. E. Jaffa—

I SHOULD like to know what to do for young turkeys. I have a great many which die after they get all feathered out. They start first by passing yellow stuff and then they only last from three to five days. I have cut them open and found one of their intestines, about 1½ inches long, all swollen up and full of blood and matter. So I would like to know what is the matter with them and what is best to do for them.

I have two hen turkeys, bronze, and one laid 101 eggs this year, the first egg March 2 and the last one November 1, and my other one laid 87, the first March 3 and the last September 20. They hatched out in May fourteen little ones each and took care of them and laid right along and then in July hatched eighteen each, and the eggs were all good. But after the little ones got to be about two weeks old they started to die and all died off, about forty of them.—J. S., Selma, Oregon.

From the symptoms above given, it would appear that the turkeys are probably troubled with liver complaint, otherwise known as blackhead. At the same time the disease may be cholera. Cholera cannot be recognized with certainty except by bacteriological examination. Practically, however, this makes but little difference to the poultryman. The methods of combatting cholera are not radically different from those used against similar infectious diseases. The occurence of a number of sudden deaths in a flock indicates the presence of an infectious disease and calls for the inauguration of sanitary and remedial measures at once.

In the case of blackheads, as it is termed, and also in some cases of liver complaint, the condition of the intestines is as described by the correspondent.

Dr. Pernot tells us: "Diarrhoea is the most pronounced symptom. The discharges are frequent, thin, watery and generally of a yellowish color. This, however, sometimes occurs from other intestinal disorders, and does not alone signify the presence of the malady. The next symtom is the drooping tail, followed by a drooping of the wings, after which death soon ensues. When the disease is at its height, the head assumes a dark color, hence the name, blackhead. Young turkeys are much more susceptible or they may be more delicate, and cannot withstand the invasion of the parasites so well. They begin by moping and bunching up as though they were cold, diarrhoea soon sets in, the tails droop, then the wings droop, and they go about uttering a pitiful 'peep,' after which they soon die. A blackening of the head does not always occur.

It is only by careful post mortem that the true cause of the disease may be determined.

The Cause—The disease is caused by animal parasites, which can be detected only by the aid of a microscope. Because of their minuteness and growth in the mucous membranes of the digestive tract they are easily carried by the excreta to food, which, upon becoming contaminated, transmits them to other fowls. This is the usual means of infection.

Remedies—Food given to fowls should never come in contact with their droppings, as one bird with the disease will infect the feeding ground of others. Better sacrifice the bird at once than run the risk of spreading the infection to the whole flock. A sick bird should be removed from the flock and placed in close quarters, which may afterwards be disinfected or the bird may be killed at once and then should be burned. Medical treatment is not very successful, owing to the difficulty of reaching the parasite at the seat of the disease; yet treating them with some of the following remedies is well worth the trouble: Sulphur, 5 grains; sulphate of iron, 1 grain; sulphate of quinine, 1 grain. Place this amount in capsules and administer on night and morning to each turkey for a week. If the bird does not respond to treatment, kill it at once without drawing blood, and then burn the carcass, disinfecting the coop.

Cholera, when present in its true form, is a most uncompromising disease. The only thing that can be done to save a flock of turkeys attacked with true cholera is to remove all the ailing ones immediately and destroy them. Transfer those not attacked to some other part of the farm and thoroughly disinfect and clean up the locality where they have been, feeding nothing but a slight grain diet for a short time. Medical treatment has been of very little service in this ailment. The drugs that have been used are sulphur, copperas, capsicum, alcohol and resin, either administered separately, or equal parts thoroughly mixed together and administered in the mash food.

Diarrhea and blackhead are often mistaken for cholera. If it is always remembered that the carcass, no matter from what cause the fowl may have died, should be either burned up or buried at least four feet underground, no infection to other fowls is likely to result. No other known cause of the spreading of the disease equals the permitting of dead bodies of infected fowls to lie about.

Diphtheritic Roup

What many poultry keepers commonly call pip, which shows a white scale on the tongue, and a languid, sick look to the eye, in most cases is nothing more or less than diphtheritic roup, a very contagious and troublesome disease. Afflicted fowls need very careful treatment, and should be at once separated from the well ones of the flock, and the houses and runs thoroughly disinfected with chloronaptholeum or some other good, effective disinfectant, and all loose nesting material burned.

A good solution for local treatment is made by thoroughly mixing one ounce of pure glycerine and one ounce of perchloride of iron, which should be thoroughly shaken each time before being used. Dip a small camel's hair brush or a stiff wing quill lightly in the solution, and paint the tongue, mouth, throat and affected parts with it twice a day at least. Three times would be more effective. As a constitutional treatment give each bird a half teaspoonful of equal parts of sulphur and cream of tartar. If the head should swell in addition to the other symptoms, rub it with mentholatum or carbolated vaseline.

As a preventive measure it is advisable to give the apparently well members of the flock some sulphur and cream of tartar. This will put their systems in a better condition and they are not so likely to become diseased.

Packing Eggs

An authority says that if the egg is placed on the side or large end the heavy yolk will settle to the bottom and come in contact with the shell, which admits the air. If it is placed on the small end it will always have a layer of white between it and the shell.

In farming, more than in almost any other profession, the greatest success of a job depends on its being properly done and just at the right time.

How People on Desert Get Produce

By Aletha Walker

THE accompanying photograph shows the box and the assortment of vegetables which the people on the Mojave desert, in California, receive from merchants for one dollor f. o. b. Los Angeles. The freight on each box is at present thirty cents to points within two hundred and fifty miles of Los Angeles.

A "Dollar Box" of mixed fruit and vegetables that is distributed to residents in the desert sections of Southern California.

They will perhaps give our readers some idea of how the merchants of that city are making the dollars grow. Also, they may prove a source of income to some farmer living near a city, or large town, wh might be able to put up mixed boxes of fruit and vegetables for his customers once or twice each week, or perhaps daily. This method would save his customers much trouble in marketing.

Only an idea: but it is what is being done each day by middlemen. Why not by farmers, thus eliminating middle-men's profits?

The University Hog Barn

ALTHOUGH most of the livestock at the University farm at Davis has to be made somewhat more elaborate and differently arranged than would be the case on ordinary ranches, on account of experimental, educational and exhibition purposes, the barns are supposed to show to some extent what good planning is for the regular farm. The hog barn particularly is inexpensive, convenient and well arranged, and something that every swine breeder, unless he has some better ideas, might well pattern after. Although it follows old-time lines, many hog barns to-day are not half as simple and convenient. Contracts were advertised for before it was built and bids were so unsatisfactory, since the affair was so simple, that the university put up the structure itself and came within the appropriation while making the barn fourteen feet longer than the original plans called for.

It is a long structure with a passage-way down the middle and hog pens on either side, as is usual, each pen opening into a yard on the outside of the building. Along the south side there is an opening under the eaves to let in light and air, and the eaves are very wide to prevent the rain from beating in. Along the north side are numerous windows in the upper part of the wall, which let in lots of light and air when necessary. Windows on one side, rather than permanent openings on both, are advisable to prevent the wind from blowing through during the storms. Near the ridge pole are ventilators to create a draft on hot, still summer days. It can be seen that the whole thing is simply a shell and can be made as simply and inexpensively as any hog barn if the builder so wishes.

The floor is concrete, sloping slightly toward the center, so that the pens can be cleaned and hosed off and the dirt will be carried off in the drain. The troughs are made of concrete with the inner side (toward the pen) rounded off so that they can be tipped over on the side and hosed off, which is sanitary and very convenient. There are two compartments in the trough, the smaller one for water and the larger for feed.

The way that the front of the pen over the trough is fixed makes it very convenient for feeding, for the hogs cannot get in the way of the feed until the feeder is ready. The panel along the alley-way edge of the trough is on hinges attached to the upper corners of the ends, and there is a 1 by 3 button a little bit longer than the height of the panel holding the panel in place. Before putting in the feed the keeper moves this tongue, shoves the panel inward and moves the tongue back behind the inner side of the trough to keep the pigs away. Then he puts in the feed without interference, replaces the panel and goes on to the next pen. The trough, panel and other details are only details, but the design of the house is excellent and the concrete floor a convenience and a help in good hog raising that is worth having.

Whether the equipment is responsible for it or not, the hogs are about as clean and fine a looking lot as one can find anywhere.

Never feed the pigs more than they will clean up. When the feed is left in the trough or on the floor it soon becomes a loss.

Have you any sheep? Then don't keep curs! Have you any curs? Kill them and get sheep!

Facts About Chinese Eggs

POULTRYMEN, newspaper editors and others have been rather excited the last month or so about the entrance of Chinese eggs into California, on the ground that they are so cheap as to be a menace to the California poultryman and so inferior an article of diet as to be an injury to the consuming public. So many wondrous tales have been spread abroad that the following few facts may be of value:

In the first place, there is no special difference between the Chinese eggs and those of the Cochins, Langshans and other breeds of Oriental origin. The slightest thought will recall that Chinese breeds have been largely used in developing many of the heavy breeds kept in America. The eggs, therefore, are of ordinary size, and ordinary brown color. Looking over a lot in San Francisco wholesale houses, one cannot tell but what he is looking over a lot of Eastern ranch eggs, for the type is almost identical, though the Chinese eggs are a little smaller. They varied in size and color like most country eggs taken in trade by country stores in America, and the Chinese apparently were no more careful about their nests than American farmers, for a good percent graded out "dirties," though no greater than farm eggs here. Conditions of transportation left them in about the same quality as Eastern eggs after a trip across the continent.

It is claimed by some that the fowls are fed on refuse and the eggs therefore are unfit to use. It is claimed by egg handlers here that the foundation of the ration is refuse rice and other cereals, clean and excellent and ideal for poultry food. If the eggs look and taste all right the trade will use them if it can.

These eggs are totally outclassed by our standard market egg in appearance, color, quality and otherwise. One egg is sold for table use almost entirely, the other almost entirely for pastry cooking and such things, and commands a much lower price. The Chinese eggs class with Eastern eggs or poor quality country eggs when the latter are dirty and mostly of uncertain age.

Hence they will lower prices of country eggs and Eastern eggs, and possibly indirectly prices of California "extras," but only slightly for the latter. Our ordinary eggs would outclass them if the roosters generally were killed, nests kept clean, eggs gathered often and regularly and packed and shipped in good condition.

Chinese eggs can be imported at all seasons of the year, and if importations continue they probably will be made quite regularly. Even if they have to be sold as Chinese eggs it is unlikely that it will materially affect the price, as they will mostly go to bakeries, cheap restaurants and such places, where the buyer does not care for the source of supply as long as it does the business for him and the ultimate consumer does not know how his food is prepared. The final word regarding importation and labeling has not been said; meanwhile it is a unique situation that overcrowded China is helping to feed prosperous America.

Incidentally, a letter by United States Consul Williamson at Antung, China, written for the United States Consular Reports long before this present agitation started, is interesting in showing how poultry is fed, also an account of the recent statement that Chinese eggs were very small.

"It may be of interest to breeders and egg farmers in the United States," says Williamson, "to know that I have seen within the last week eggs weighing over 4 ounces, produced by an ordinary hen of no particular breed, fed on corn and kept in a confined enclosure. This, however, is not a daily performance. The fowl referred to is a black hen, of no special breed, but resembling a Langshan. She lays an egg weighing four ounces or over at least every third day, and lays an egg every day for about a week or ten days, when there occurs an interval of two or three days during which no eggs are laid. The smaller eggs average six to the pound. The shell is brown, with a circle of dark spots near one end.

"Other hens bought in the market average 6 eggs to the pound, with white or brown eggs, there being no standard, of course. What these hens could do if fed and cared for scientifically cannot be told, but they should do wonders.

"It is common to buy from Chinese eggs that will average 6 to the pound, though smaller ones are also plentiful, but the chicken business is not yet understood by the Chinese, and the hens get practically no care or attention. They forage and care for themselves. The largest eggs I have seen here averaged 4 to the pound, some being slightly below 4 ounces, and others slightly over; some even 4½ ounces. These were from a hen kept by a man in Antung, whose hens get more attention and better food than the Chinese-kept hens. The best hen referred to was bought in the market for killing, but escaped that fate and has established a local record. This man has sent some of these eggs to Norway, where they were admired. It might be possible to improve the size of American eggs by the introduction and careful breeding of some of the fowls referred to, if American poultrymen are interested."

Chicks Dying in the Shell

Chicks dying in the shell is a common trouble in hatching and one which causes many failures each year. There was no attempt to discover why the chicks die in the shell until the hatching of them with incubators became popular, although this trouble predominated when the old biddy sat on the eggs long before the incubator was even thought of. There were only a few under each hen at the most, and nothing was thought of it, but when the incubator came into the field and made it possible to hatch them by the hundreds the cause of the chicks dying in the shell came up for discussion

Remember that the secret of securing high per cent hatches depends as much upon strongly fertilized eggs laid by healthy, vigorous birds as on proper incubation. The more frequent causes of chicks dying in the shell where the incubator or operator is at fault are irregular temperature, neglect in turning the eggs, improper ventilation or more frequently caused by operating the incubator in a poorly ventilated room.

Why the chicks die in the shell is a somewhat different question to answer, for the causes are not always the same. Perhaps not in two cases in twenty will the conditions under which the eggs are incubated or the conditions surrounding the eggs before they are placed in the incubator be the same, hence the cause must necessarily differ greatly. It is, therefore, difficult to give any definite instructions that will apply in all cases. A few chicks failing to come out of the shell is no indication of faulty incubation, nor does it necessarily mean a weakness in the breeding stock. However, when a large number die in the shell you should look about for the trouble, and this is not always easy to find.

INCUBATOR CHICKS

White Rock, Black Minorca, White, Brown and Buff Leghorn.
All high-class stock. Send for booklet of prices.
MAHAJO FARM
Perkins, Sacramento County, Cal.

During the Moulting Season

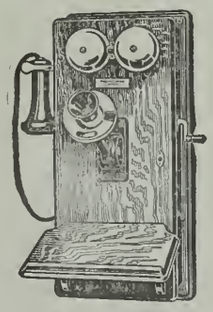
Do not neglect your hens. Feed daily GOLDEN EAGLE EGG FOOD, either as a dry mash, or in a crumbly form. Bring them through the moult quickly and keep them in good condition during this period.

DON'T PUT OFF TO-DAY,
AS THE HENS MAY CEASE TO LAY

Golden Eagle Milling Co.
PETALUMA CALIFORNIA

Western · Electric
Rural Telephone

It works well in all weathers



Just talk in your natural voice

Highest telephone quality

Made in the same shops where all "Bell" telephones are made, by the same expert workmen. No other rural telephone has such sturdy construction, positive action and clear, loud transmission.

It is a real pleasure to talk to folks with a Western Electric Rural Telephone. No need to yell. No need to repeat what you have to say. You hear distinctly —and so does the party on the other end of the line.

You can always depend on a Western Electric Rural Telephone to give you the best kind of telephone service at all times. It has been chosen by thousands of progressive farmers throughout the United States, and is giving general satisfaction. The largest telephone manufacturers in the world make it—and guarantee it.

Before you buy any telephone equipment or replace any instrument that may be now in use, write to our nearest house, as listed below, for our new illustrated book on rural telephones. Ask for book No. 95.

WESTERN ELECTRIC COMPANY
Manufacturers of the 7,500,000 "Bell" Telephones
New York, Buffalo, Philadelphia, Boston, New Orleans, Atlanta, Richmond, Savannah, Cincinnati, Chicago, Milwaukee, Pittsburgh, Cleveland, St. Louis, Indianapolis, Minneapolis, St. Paul, Kansas City, Oklahoma City, Dallas, Houston, Denver, Omaha, Salt Lake City, Los Angeles, San Francisco, Oakland, Seattle, Portland
EQUIPMENT FOR EVERY ELECTRICAL NEED

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

THE FARMERS' MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

S. C. White Leghorns—Baby chicks for sale; baby chicks, day old, $10 per hundred, and $90 per thousand. Eggs for hatching, $1.50 per hundred. Cockerels and pullets, prices on application. **The Model Poultry Farm, Box L, Irvington, Cal. A. de Campos, Prop.**

For Sale—Thoroughbred Bourbon red turkey toms, 7 months of age, weighing 25 lbs. and over; fine, healthy birds, nothing better in California; also a few white Hollands hens, 6 to 8 months old, and two toms. **Wm. S. Zeller, P. O., Escalon, Cal.**

FREE—66-page catalogue, describes in detail prices, etc., on 19 kinds of baby chicks, hatching eggs, incubators, brooders, etc. We ship everywhere. **The Pioneer Hatchery Co., 112 E. 8th st., Los Angeles, Cal.**

Muscovy Ducks. Heaviest, best paying ducks for market. Cheap feeders. Hatching eggs, ducklings and young selected breeding birds for sale. **Lebeck, Petaluma, R. 1, Sonoma Co., Cal.**

Brown Leghorns—A fine lot of breeding and exhibition cockerals, stock from the best Eastern breeders; also good Buff Orpington hens and grown pullets, eggs for hatching. **Fredensborg Ranch, Suisun, Cal.**

PETALUMA HATCHERY—Now booking orders for spring. Send for circular. Can ship chicks to points reached in three days. When ordering why not get the best? **L. W. Clark, Petaluma, Calif.**

Hatching Eggs in plenty from Hogan-ized S. C. White Leghorns. Heavy layers; remarkable fertility. $6 per 100. Reductions on large orders for March and April. **Pine Creek Poultry Farm, Los Gatos, Cal.**

Buff Orpington Cockerels from the second prize cock bird Los Angeles Show, 1913, price $5.00; eggs from the same winner at $3.00; Partridge Wyandotte eggs from prize winners at $2.00 per setting. **Jas. R. Wallace, Long Beach, Calif.**

Mammoth White Holland Turkeys—Now booking orders for hatching eggs; eggs from two unrelated pens, $3.50 and $5 per 13; also breed Campines, Houdans, White Orpingtons. **"The Gibson Ranch," Orangevale, Sacramento Co., Cal.**

Campines, Silver and Golden—Improved American type only; eggs for hatching; Silvers from $2.50 to $5 per setting, according to quality; Goldens, $5 per setting. **Arthur King, Box 30, Route 1, San Luis Obispo.** Member American and Pacific Coast Campine Clubs.

True Blue Andalusians, imported strain. Eggs, $2.00 for 14; $9.00 per 100. The best on the Coast. Write for circulars with winnings. **J. R. Huddleston, 342 Edgeware Road, Los Angeles, Cal.**

White Leghorn Baby Chicks from stock selected by Hogan's system for laying qualities and of great variety, $9 per 100. **Arthur King, Box 30, Route 1, San Luis Obispo, Cal.** See my Campine advertisement.

"Pigeons," Runts, Carneaux, Homers, Maltese, Tumblers, White Kings; thousands to select from; largest plant in West. **C. H. King, E and Spring st., Hayward, Cal.**

Baby Chicks. Write for book, "The Day Old Chick Business." Its free. White Leghorn and Black Minorca chicks my specialty. **Lusker's Hatchery, 420 Kentucky st., Petaluma, Cal.**

Feed Croley's Infant Chick Feed. Raises more healthy chicks than all the other feeds combined. Manufactured by the **Geo. H. Croley Co., Inc., 631-637 Brannan St., San Francisco.**

Trap-Nested S. C. White Leghorns—Cockerels, breeders, eggs and chicks. **Arthur R. Sellroeder, Box 22, San Gregorio, Cal.**

BABY CHIX AND EGGS—From grand laying strain of S. C. Rhode Island Reds. **Inwood Poultry Farm, Box 192, Folsom, Cal.**

Indian Runner Ducks, 5 and one drake, $10; eggs from Oakland prize winners, $1 setting. **Mrs. Nutman, Mayfield, Cal.**

For Sale—Light Brahma eggs, $1.50 per 15; from as fine a flock as there is in the State. **W. F. Kapfinger, Salem, Ore., R. 6.**

White Rocks—Mottled Anconas—Trap nested stock feeding; no drones; catalogue free. **C. Daniels & Sons, Ideal Poultry Yards, Hoquiam, Wash.**

Orchard and Farm Brings Results

The Experience of One of Our Classified Advertisers.

ORCHARD AND FARM,
San Francisco, Cal.

Gentlemen—Our small ad in the classified department surely is bringing us results, and we find it one of the best advertising mediums on the Coast.

Yours for success,
CALDWELL BROS.

Los Angeles County.

POULTRY—Continued.

Electrically Hatched Chicks are uniformly strong and vigorous. All standard breeds furnished. Write for price list. **Electric Hatchery, Hayward, Cal.**

White Wyandottes—Big layers; cock 1st prize pen State Fair 1913; breeding stock, hatching eggs, baby chicks; correspondence solicited. **Ormond Ranch, Corning, Cal.**

Buff Leghorns, prize-winning strain, strong, vigorous stock. Eggs $1.50 per setting, $7 per 100; chicks $15 per 100. **Amos Bowler, Route 5, Petaluma, Cal.**

Barred Plymouth Rocks—"The kind that win and lay." Eggs for hatching and stock for sale. **Chas. H. Vodden, Box 693, Los Gatos, Cal.**

Bronze Turkeys and Eggs—Large size; good plumage; early maturity. Eggs $5 per setting; $35 per 100. (Circulars.) **Ed. Hart, Clements, Cal.**

Baby Chicks (White Leghorns) shipped on approval before remitting. No weak ones charged for. **Schellville Hatchery, Route 4, Sonoma, Cal.**

Petaluma Brooder Stove. Modern way of brooding. Free catalogue. **Petaluma Brooder Stove Company, Hayward, Cal.**

Eggs for early hatching from carefully mated pens. Prices reasonable. **The Buff Orpingtons You Want. Ernest L. Wilder, Los Gatos, Cal.**

Buff Orpington Eggs—$3, $1.50 setting, Runner Duck Eggs, $1. **"Glendale," Fleming Ave., San Jose, Cal.**

R. I. Red Eggs and Chix from great laying strain of **Inwood Poultry Farm, Box 192, Folsom, Cal.**

Silver Campines Runner Ducks—Circular free. **Carl W. McDowell, Rockford, Wash.**

If You Want Eggs, get Andalusians. **Daniel Calbreath, Monmouth, Oregon.**

MINING

Full ownership deeded to you, each representing 19.2 acres in gold dredging land in Arizona. Preliminary testing shows values in excess of 50 cents per cubic yard. Tract comprises 1,920 acres, divided into 100 units at $150.00 each—60 are for sale. Money used to test and drill ground. Write for particulars. **Jno. A. Lloyd, Owner, 908 Pacific bldg., San Francisco, Cal.**

BELGIAN HARES

Thoroughbred Belgians, with or without pedigrees. **Old Hickory Supply Co., Dept. 5, San Francisco.**

HOUSEHOLD SUPPLIES

To reduce the high cost of living, send for our Wholesale to Consumer Catalogue. **Smith's Cash Store, 110 Clay St., San Francisco.**

AGRICULTURAL LIME

Lime is Nature's Crop Producer. We manufacture the highest grade agricultural lime—both hydrated and ground carbonate. Get our free booklet and prices. **Pacific Lime and Plaster Company, 807 Monadnock Bldg., San Francisco, Cal.**

Agricultural Lime for alfalfa, orchards, poultry yards and garden crops. Send for literature. **H. H. Matthews, 733 Merchants' Exchange Bldg., San Francisco.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

LIVESTOCK

Ohio Improved Chester (O. I. C.) Swine for immediate delivery; young service boars 10 and 12 months old, fall pigs, both sexes, from big, aged sows and by extra heavy-boned boars; few breed sows. All stock strictly first-class in every respect. All stock crated and registered free. **C. H. Cunningham, Mills, Sacramento county, California.**

Grape Wild Farm Thoroughbreds—Guernsey Bulls of Advanced Register Breeding. Berkshire Hogs. Largest herd. Best Eastern strains. All ages for sale. **A. H. Humphrey, Prop., Mayhews, Sacramento Co., Cal.**

For Sale or Trade—Registered Missouri jack, 5 years, 15.3 hands, sound, big and heavy boned; good colts to show. Want work stock, horses or mules. Address, **Linden Stock Farm, Linden, Cal.**

Hogs—Registered Duroc's Pigs; bred gilts and boars of good Eastern and western strains. For particulars address **Lindquist Brothers, Turlock, Cal.**

Calves Raised Without Milk—Cost less than half as much as the milk-raised calves. Write for free book to **Conison Co., Box O, Petaluma.**

Tamworths—Two big red bacon and block hog. Send for circular and prices. **Cottle & Hobson Co., Amsterdam, Merced County, Cal.**

Poland Chinas—I still have a few registered Gilts and one bred sow for sale; satisfaction or money back. **N. M. Lester, R. F. D. No. 1, Gridley, Cal.**

Registered Duroc Hogs, $10, at weaning time. Out of champion ancestors. **Ed. E. Johnson, Turlock, Cal.**

Ring-Necked China Pheasants for Sale—Also eggs in season. Address **T. D. Morris, Agua Caliente, Sonoma Co., Cal.**

Registered Berkshires, $10, at weaning time. **M. D. Good, Mt. Vernon, Wash.**

Glenview Poland China Stock for sale—**Chas. R. Hanna, R. D. 3, Riverside, Cal.**

Malefoot hogs are best for Pacific Coast. For information write **John Dunlap, Williamsport, Ohio.**

For Sale—Registered Guernsey bull. **K. L. Evans, Gilroy, Cal.**

BUSINESS CHANCES

Free for Six Months—My special offer to introduce my magazine "Investing for Profit." It is worth $10 a copy to anyone who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how anyone, no matter how poor, CAN acquire riches. INVESTING FOR PROFIT is the only progressive financial journal published. It shows how $100 grows to $2,200. Write NOW and I'll send it six months free. **H. L. Barber, 409-20W Jackson Blvd., Chicago.**

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

MISCELLANEOUS—FOR SALE

Second-hand and new Water Pipe—All sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Second-Hand Pipe—Largest dealers in standard pipe and screw casings; prices right; guaranteed first-class. **Pacific Pipe Co., Main and Howard sts.**

PHEASANTS

Booklet, "How I Raise Pheasants," 20c. Prices free. **H. W. Myers, Tacoma, Wash.**

REAL ESTATE

Victoria, Australia, wants settlers—Special inducements offered by State Government, which owns lands, water, railways and free schools; excellent climate; resembles California; no extreme heat or cold, small deposit and 31½ years for purchase of lands; adapted to every kind of culture; citrus fruits, apples and pears; wheat, corn, alfalfa, sugar beets; dairying, hog raising, etc.; ample markets; exceptional opportunities in irrigated districts; reduced passages for approved settlers; free particulars from **F. T. A. Fricke, Box T, 687 Market St., San Francisco.**

Fine mountain ranch, 168 acres. Good alfalfa land, about 100 acres can be plowed and irrigated; good water right from river running through place, several good springs, one valuable sulphur spring. Large orchard of apples and mixed fruits, nuts, grapes, berries, fine potato land; ready sale at good prices for everything raised; fine scenery; an ideal summer resort; small store would pay fine; nearly new 7-room house, large barn, chicken houses and price $6,000, $3,500 cash, balance $500 a year; no trades. **W. Wallace Baldy, Mist, Madera county, Cal.**

For Sale—Well improved 800-acre grain and stock farm, including about 125 head cattle, 40 horses, 250 hogs, 5,000 bushels grain, all farm implements; located 25 miles south of Calgary, 5½ miles from Okotoks. In the best part of Alberta, Canada. Price $42,000, about one-half cash, balance time to suit purchaser. For further information address owner, **John P. Todd, box 31 Okotoks, Alberta, Canada.**

Thirty-Acre Home for Sale—Modern seven-room house; barn 66x96; family orchard; $27 almonds sold from three trees; oranges, lemons, grape fruit, peach orchard. Thompson's grapes and alfalfa; $12,000; terms; would divide. **N. M. Lester, R. F. D. No. 1, Gridley, Cal.**

For Exchange—An eight-room house, electric lighted, centrally located on street car line. Lot 50x135 with house for $6,500; $2,200 mortgage. Would prefer to trade for equity. Write **Omer N. Krusehke, 2114 Center st., Berkeley, Cal. Phone Berkeley 532.**

OREGON—I have some real good bargains in stock, grain, dairy, fruit and poultry ranches; also lots, acreage and town property. Write for list. **Henry Ambler, the Old Reliable Real Estate Agent, Philomath, Benton County, Oregon.**

Just what you want—Our new 1914 booklet. Tells the how and why about State, Government and Indian land bargains. Send dime or stamps. **The California State Land Information Bureau, Sacramento, Cal.**

For sale—Two residence lots in Regents Park, Albany; two blocks to car line; 5c fare to Oakland; all city conveniences; public school; reasonable; terms. Address **E. V. Shackelford, Oakdale, Cal.**

Send for illustrated circular of best, most artistic orchard home in Santa Clara Valley; 20 acres. **John F. Hixbee, Palo Alto, Cal.**

320-acre grain farm in best wheat growing section Southern Alberta for sale cheap. Apply to owner, **T. A. Bryant, Lake Macgregor, Alberta.**

For Sale—Two acres rich, sandy loam; half mile from Petaluma; greatest business city West. **Mrs. A. Zeh, Gossage Road, Box 32, Petaluma, Cal.**

For Sale—Villa sites on the Blue Lakes. Address **G. A. Behrnd, Midlake P. O., Cal.**

REAL ESTATE WANTED

Farms Wanted—We have direct buyers; don't pay commissions; write, describing property, naming lowest price. We help buyers locate desirable property free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted—Farm lands. For quick results state price and description in first letter. **Western Sales Agency, Phoenix Bldg., Minneapolis, Minn.**

MACHINERY AND SUPPLIES

For Sale — Farming Machinery — One new Case 60 h.-p. steam engine and new separator, 32-inch cylinder, with blower and recleaner; also two new sections of John Deere steam plow. **Box 288, Santa Ana, Cal.**

PATENT ATTORNEYS

Dewey, Strong & Co. (Est. 1866)—Patents, trademarks, inventors' guide, 100 mech. movements free. **911-916 Crocker bldg., San Francisco.**

THE FARMER'S MARKET PLACE

SEEDS, PLANTS, ETC.

trawberry plants—Marchell, Gold Dollar, Clark's seedling or Hood River, 2.50 per 1,000. Cuthbert raspberry. ow prices. **J. W. Vinacke, Canby, regon.**

pineless Cactus—Burbank's improved varieties of forage and fruiting cacus. Orders taken for spring 1914 deivery. Send for catalogue and price st. **Jesse I. Jewell, Santa Rosa, Cal.**

he 1,200-Acre Nursery—Growers of 1,500 varieties of trees and plants. **regon Nursery Co., Oreneo, Oregon. ales office, 523 Chamber of Commerce, os Angeles, Cal.**

t. Regis Everbearing Red Raspberry Plants—Most famous berry grown; lso improved strawberry plants. Send or catalogue. **Old Hickory Supply Co., ept. 5, San Francisco.**

arly Tomatoes—If you have failed on account of dropping of the early lossoms, try the **"Quarantino."** Packet 0c, ounce, 50c. Plant now. **J. S. Philpni, Norwalk, Cal.**

erry Plants — Everything in small fruits for garden and orchard. Send o-day for price list. **Louis F. Scribner, Pasadena, Cal. R. F. D.**

or sale—Lake county alfalfa seed. 1913 crop. Price 12½c per lb. F. O. . Ukiah. **A. O. Wheeler, Upper Lake, al.**

wo million strawberry plants, Loganberries, blacks, gooseberries, etc. **H. . Hyde, Watsonville Nurseryman.**

Vanted—28,000 leaves of Burbank standard cactus in leading varieties. ddress **P. O. Box 265, Santa Rosa, Cal.**

our Orange Seed and Seedlings, 30,000 Eureka Lemons, 50c. Otis E. Hyde, 3 North Meredith ave., Pasadena, Cal.

Vetch, timothy, clover seed. Lowest prices. **Westacott & Co., Salem, Oregon.**

For Sale—Loganberry tips. Write for prices. **Walter Campbell, Gervais, Oregon.**

Horseradish sets for sale. **Edwin Olson, Hillsboro, Ore., box 502.**

Clean Vetch Seed, $2.75 per hundred. **Murphy's Seed Store, Albany, Ore.**

EDUCATIONAL

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

FROGS

Frogs—Investigate breeding big Eastern bullfrogs; unusual possibilities west of mountains. Tremendous demand. **Aquafeco, Seymour, Conn.**

NOVELTIES

Swiss Warbler's Bird Call — Imitates any bird or animal perfectly; hunter's friend; boy's delight. 10c postpaid. **Hilliard, 652 Dora, Ala.**

DOGS

oughbred Scotch Collie Male Pups, 10 weeks old, $5 each. **C. Keaton, R. 5, San Jose, Cal.**

AGENTS WANTED

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

RABBITS

Thoroughbred Belgian, Angora, New Zealand and Flemish Rabbits—1913 winners of 16 firsts, specials and cash prizes. Catalogue free. **Caldwell Bros., Los Angeles, Cal., San Fernando Boulevard.**

Hare-Feather Yards, Sinnott strain of pure bred Belgian, New Zealand, Flemish Giant rabbits. **2219 Trinity st., Fresno, Cal.**

High-grade flemish giants. Cobrook Rabbit Company. P. O. box 354, San Jose, Cal.

TREES

Tree Bargains—French, Imperial, Fellenberg, sugar and Hungarian prunes; Bartletts, apples, peaches, cherries, almonds and figs, grafted Franquettes on Calif. Black. Buds and scions carefully selected from bearing trees of the best strain. Stock hardy and clean. Prices very reasonable. Specially low prices for large orders. Write or wire your orders promptly as stock is moving rapidly. **Table Grove Nurseries, Healdsburg, Calif.**

HARTLETT PEARS—Strong, healthy, finely rooted trees; apples, almonds, prunes, peaches, apricots, plums, including "Lindley," a new, first offered Japan strain; beautiful. Prices way down for quick application. **F. L. Perry, Chico, Cal.**

Sixty-Day Prices on orchard trees, four to six feet; Apple, $5.00 for 100; Pear, $14 for 100. Write now. Guaranteed stock. **Southern Oregon Nursery, Yoncalla, Oregon.**

Orange Trees—First-class navels and Valencias, one-half inch and over in diameter, 50c each or $4.75 per thousand. **A. G. Wright, Fullerton, Cal.**

Robinson Citrus Nurseries, San Dimas, Cal., growers of standard orange and lemon trees. **Burbank and Mediterranean Spineless Cactus Plantations.**

Citrus Nurseries, Murphy Oil Company, East Whittier, California. Selected stock for sale; inspection invited.

Good Line Nursery Stock—Prunings, all kinds, 10 per cent under market. **Farmers' Nursery, Sebastopol, Cal.**

For Sale—Fine orange trees. Price reasonable. **George Jesser, Springville, Cal.**

800 orange trees for sale. **A. C. Blayney, Fowler, Cal.**

Paw Knows Everything

Willie—Paw, has the age of miracles passed?

Paw—No, my son. Lots of men are turning night into day.

Water for Poultry

—By Chas. W. Peters—

ON the Superior Egg Farm, located near Anaheim, California, there is in operation a watering system for poultry the like of which, while possibly in operation elsewhere, has never before come under the writer's notice.

The poultry yards, holding about 500 hens, are 50 feet wide and 80 feet long. On one long side, directly in line with the fence, is built a rather shallow cement trough, 10 feet long, 1 foot wide and from 6 to 8 inches high, outside measurement. The inside is rounded with a trowel at the time of construction and is made to hold 10 to 15 gallons.

The water is piped from a central reservoir tank, and the flow is regulated by a syphon, carefully adjusted. This is done by bending the rod connecting the faucet and the bulb to the desired angle.

In the opposite end is placed a 1-inch ell, with a short strip of pipe and collar, so that a plug may be screwed in at the time of filling, or taken out whenever the fountain is cleaned. This is done once a day, and a broom used for this purpose.

After the cement work is finished a cover for shading the water is constructed. Two short strips of 1x10 redwood are cut so that the bottom is 12 inches and the top 6 inches long. These two pieces are nailed on the top to a piece of 1x6 redwood 10 feet long. A piece of 1x10 redwood is then cut 10 feet long and hinged to the 1x6, so that it may be thrown back whenever the fountain is cleaned. This board in its normal position lies at an angle of about 45 per cent, following the cut made in the two end pieces. One side and the bottom, you will notice, are entirely open.

This covering is then placed on the cement trough so that the open side is facing the yard. The fencing up to the top of the covering is cut away, and the fowls can then have easy access to pure, cool water at all times.

Citrus Acreage

FEW things have been more notable in recent years than the wonderful increase in citrus acreage in the foothills of the Sierras and Coast Range north of the Tehachapi. Careful selection of localities for planting is essential, yet there are dozens of nooks and corners at the sides of the Sacramento and San Joaquin valleys that have the mild winter temperatures that are required for best success with citrus trees, and in which even tomato and other delicate plants are not killed by frosts.

An example of this is found at the head of Capay valley, near Rumsey. Here this narrow valley, over twenty miles long, broadens out in a beautiful amphitheatre, sloping from three sides to Cache creek as it emerges from the mountains. Deciduous trees, largely apricots, occupy most of this land, which for decades has been given to fruit production. Only recently has any thought of citrus growing as a commercial proposition been thought of, and even now the thought has not gone very deep. Several of the first settlers planted orange trees, practically all seedlings, mainly for home use, and there are five or six small citrus groves of old trees and a small amount of new planting to standard varieties. The trees were pruned to grow like oaks, not like oranges. Being seedlings also, and the trees rather neglected, the fruit generally falls below standard, although it is produced in great abundance. From the best trees oranges have been sold locally or in Woodland, more than forty miles away, but most of the fruit falls neglected to the ground.

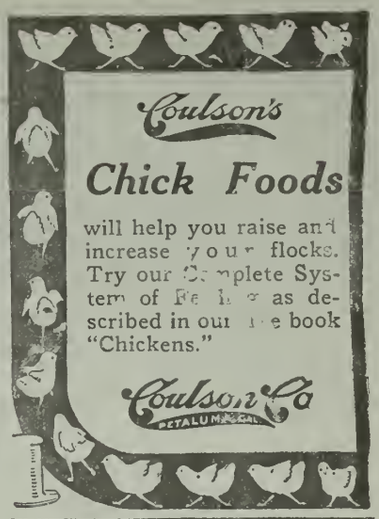
When inspected, early in February, when the trees should be most dormant, and frost injury most apparent if any existed, for it had been quite clear and sharp in the Sacramento valley, the bark was loose and there were vigorous shoots with a color that brought delight to the eye. On the very few lemon trees, which are extremely delicate, were lemons that in thinness of skin and fineness of texture were unexcelled, all tree ripe and dead ripe, for the lemons are not handled as lemons should be. Young growth and a rare blossom or so had been absolutely untouched by frost. Yet good lemon land that is unplanted is rare in California and valuable. Not a sign of scale or injurious insect nor a single mottled leaf could be found. The soil is deep and rich, and irrigation water is available.

Spots like this can be found here and there from Tehachapi to Red Bluff. The interesting thing about it is that they have been generally overlooked and neglected while great acreages were being planted in less favorable situations. The proper development of California consists largely in adapting crops to locations: standard crops for ordinary locations, special crops for special locations. Freedom from severe frosts is highly desirable in any citrus location. Where exceptionally favorable conditions exist and soil and moisture all that can be desired the opportunity for citrus planting cannot be overlooked.

Secrets of Egg Getting

The secret of egg production consists of a good supply of grit, good health, plenty of exercise, pure food, greed food, fresh water, green cut bones, freedom from lice, regularity in feeding, cool houses in summer and warm ones in winter, and breeding only from the best laying stock.

In purchasing a boar it is well to bear in mind that one with heavy bones is more to be desired than one of slight build.



Tells why chicks die

J. C. Reefer, the poultry expert of 1634 Main St., Kansas City, Mo., is giving away free a valuable book entitled "White Diarrhoea and How to Cure It." This book contains scientific facts on white diarrhoea and tells how to prepare a simple home solution that cures this terrible disease over night and actually raises 98 per cent of every hatch. All poultry raisers should write Mr. Reefer for one of these valuable FREE books.

Don't Pay in Advance

Send sample of your hair and 5c postage. We will match and mail you a fine human hair 22-inch switch, wavy or straight. If satisfactory remit $1.50. If not, return switch, or sell three and get yours free. Booklet on request.

BETTY BOOTES CO., 251 E Post St., San Francisco

Kills Prairie Dogs and Gophers of all kinds. Endorsed by State Experimental Stations. 1400 tablets prepaid for $1.25. Warranted. Raticide Tablets, 25c. Ask druggist or send direct. Booklet Free. F. D. Chemical Co., Ft. Dodge, Ia.

"What does you understand by 'circumstantial evidence'?" asked Miss Miami Brown.

"As near as I kin 'splain it f'um de way it has been 'splained to me," answered Mr. Erasmus Pinkley, "circumstantial evidence is de feathers dat you leaves lyin' around after you has done eat de chicken."

Control of Temperature When Cooking

By MARY B. VAIL, Head of the Department of Home Economics in Mills College

THE word cooking implies the thought of food that has been brought into contact with heat in one form or another. The temperatures used vary widely, from that of the fireless cooker to that of the top of a hed-hot stove, and they must be selected with reference to the kind of food to be cooked and the process to be used. If the method used is steaming or boiling, we know positively that the temperature at sea level is 212 degrees Fahrenheit, and that as the elevation increases the temperature of boiling decreases; assuredly, then, it takes longer to cook at boiling temperature in the mountains than near the sea, because we have less heat at our command.

It is the ready use of heat, this easy control of heat, which we intend to emphasize in this article. If this control were as thoroughly understood as it should be by the average housekeeper the standard of housekeeping would be raised to a higher point of efficiency. Heat in the kitchen should be as thoroughly under control as the steam in the modern locomotives, and it may be applied in as many different ways as is electrical energy.

We may surround the dish in which the food is cooking with boiling water, as in the double-boiler, and keep the food at about 200 degrees Fahrenheit. If a homemade fireless without hot stones is used the temperature at which the food is to be cooked will be under 200 degrees and the time consumed will be considerably longer; if hot stones are used the temperature will be maintained longer at the boiling point and the time required will be shortened. When deep fat is used the temperature ranges between 340 and 380 degrees. When dry heat is used the temperature mounts very rapidly. In an oven, for instance, the baking temperature is from 300 to 600 degrees, and on top of the red-hot stove it approaches 1,000 degrees. The higher the temperature the closer must we watch the food that is cooking; and when little or no water is used cooking requires almost constant attention. Thus it will be seen that temperature is within our control, but its form must be selected to meet conditions and its amount applied wtih discretion.

Foods are complex materials and easily changed or broken down. We know that cooking with water changes the powdery raw starch into a product more nearly soluble, more easily digested and finer in flavor than the original material. We realize that water may be driven out of food, which will then burn. Few foods have water enough in them to be baked alone. We know that meats, eggs, cheese, etc., are made tough and dry by high heat. We are conscious of the odors of cooking, but do not stop to think that the delicate food flavors are vaporized near the boiling point, and that the finished product lacks just the flavor we recognized as the odor given off in cooking, like the odor of smoking or burning fat, but we do not realize that fats are easily broken by high heat and that the results are not desirable food materials. In fact, food is very unstable, and we would be better cooks if we controlled the heat and used a lower temperature for a longer time. Unfortunately, American cooking does not rank high among critics, for it is done too much on the top of a hot stove. We have learned to like a burnt taste rather than the flavor of the food itself; but burnt food is not easily digested, if at all. We can, however, add a browned flavor to the food and still cook at low temperature.

Let us consider methods of low-temperature cooking.

The use of a water bath in cooking, commonly known as double-boiler work, has the advantage of requiring little attention and producing delicate results. The temperature at which the food is cooked is below that of steam, and the time consequently longer, but the result in most cases warrants it. Proteins need low temperature for best results, and a double boiler is a desirable means of cooking milk, cheese, eggs, fresh legumes and tough meats. Starches, such as cornstarch and breakfast cereals, should be started directly over the fire, watched and stirred that they do not burn, and, when they are thick enough to serve, they should be put over water and cooked for an hour, without stirring, to complete the work. A chafing dish is a fancy double boiler, but it is not necessary to buy a chafing dish or a double boiler if you can use the principle involved and improvise one. Find two saucepans with rims about the same size, one about two-thirds as high as the other, the shallow pan a flaring pan. Put water in the deeper one till it touches the bottom of the shallow one. Put the food in the shallow pan over the water and cover it.

A stew may be cooked very satisfactorily in the double boiler. Put into the shallow pan one pound of breast of lamb or veal, clean and cut in small pieces, with one teaspoon salt, a little pepper and enough cold water to half cover it—two or three cupfuls. Heat it directly over the fire almost to the boiling point, then put it over boiling water for several hours, or until tender. About an hour before serving cut up fine and brown in a skillet with a little fat, one onion, two carrots and one turnip. Take the meat out of the broth, add the browned vegetables and two or three potatoes cut in cubes. Cook till tender directly over the fire, thicken and season the gravy; then put the meat back, heat it up and serve. A stew may be cooked directly on the hot stove, but it should never boil. The French say a stew boiled is a stew spoiled. If you can control the temperature by putting the stew into the fireless cooker it will be satisfactory, besides being economical of fuel.

The homemade fireless cooker is but one step removed from the double boiler. Instead of surrounding food with water to keep it cooking, we surround it with air, or air and water. Air is one of the poorest conductors of heat, and in consequence hot material having still air around it loses its heat very slowly. It is this principle of poor conduction that makes the success of the fireless cooker. If the new fireless cooker, with hot stones, is used, the cooking temperature, or one still higher, is maintained for a much longer time. It is the layers of air inclosed in the packing that makes the fireless cooker effective. It stands to reason, then, that the packing material must be loose, not solid, and preferably odorless, if the food is near it.

A fireless cooker may be made at home out of an old trunk, a barrel, a candy pail or a box with a comparatively tight cover, using twisted paper or excelsior rather than hay as packing. The bottom and sides should be padded about four inches deep, and three or four pillows of different sizes should be available to cover or separate the dishes. If stones are to be used, the padding must be noncombustible, mineral wool or asbestos being preferable, and a metal container must be provided to receive the hot stone. Aluminum dishes with covers that clamp down may be bought in any size for use in a fireless cooker. One or more covered pails may be used singly or one inside the other, thereby combining the water bath and the fireless cooker. This last is most satisfactory if the layer of water is both under the inner pail and at the side of it, as in the double boiler. To use this device, prepare the foods as directed above for long cooking in the double boiler, have both containers at the boiling point and as much water as possible in the lower part. Put them quickly together and pack away in the fireless for several hours or over night. Before serving the next day the food probably will need to be reheated. If a single container is used, the water about the food must supply the heat.

For a five-pound piece of ham or leg of mutton, put five quarts of water into a suitable kettle, bring it to the boiling point, drop the meat into it, let the water boil for ten minutes to harden a layer on the outside, then place the kettle on the back of the stove, where it will not boil, for twenty minutes, bring it again to the boil, cover it, bury it in the fireless and leave it about twenty hours. The result is most satisfactory.

Casserole cooking is done in the oven in a covered crockery dish, the food being served in the dish in which it is cooked. The cooking is continuous, as the casserole holds the heat, but the oven temperature must be low. The food is usually seasoned and thickened before it goes into the oven.

It is control of heat that gives the results desired. If good cooking can be done by simpler processes than those of boiling or baking by the old-fashioned stove, we must devise some such means to regulate and to take advantage of those processes, most of which imply low temperature. We must use our brains to save fuel (money), personal attention (time), and stirring and combining over a hot stove (energy), and at the same time do better work and produce better results.

If this argument for low temperature cooking is convincing and its practice in the preparation of food is followed, it should simplify the work in the kitchen and will prove to the cook that control of heat is as esential to the cook as control of the switch is essential to the motorman, and that the greater the control the cook has over her heating plant the more readily will she be able to produce the results desired.

The Health of the Child

TWO problems concerning the health and physical and mental development of a child confront thoughtful parents to-day, consideration of the child outside of school and attention to its environment within the school.

Whether in country or in city, the home influence on its health is most important. A constant and controllable factor is its food. Herein lies the home responsibility of the mother. She must learn that the food of the growing child is next only in importance to its feeding as an infant; and that the greatest good comes to it from plain, nutritious, well-cooked and easily digested food; that it needs certain foods for body structure and other foods to supply heat and energy.

A child should frolic and romp and play because there is a natural relation betwen such muscular activity and the proper performance of such food material in carrying on their functions.

The mother must also realize that rest is as important for the child as play and that sufficient quiet, restful sleep does its equal part in storing energy and bringing about perfect development.

Children need sunshine and fresh air, and at night should sleep in a well-ventilated room with the windows well down from the top. They should be bathed regularly and properly clothed.

But no matter how well fed and clothed, how clean and well nourished previous to its admission to school, the parents' interest must follow the child to the schoolroom and see that such environment does not undermine its health. Herein lies the responsibility of the father, as a citizen and taxpayer. It is his money that maintains the school and it is his duty to see that his child is not forced into an overcrowded, poorly ventilated, overheated classroom, compelled to breathe for five hours a day the expirations from forty or fifty pairs of lungs, and its condition so weakened as to render it vulnerable to the attacks of infectious disease. Any one, on reflection, will be impressed with the futility of expecting a maximum progression, physical and mental, where children are with little or no moisture in the air, compelled to breathe dry, vitiated air and to attempt mental tasks with suffocated brain-cells deprived of nature's generous supply of oxygen. This is the condition in a large number of schoolrooms throughout the land to-day.

The Household Exchange

A GREAT many interesting suggestions were received during the month on housecleaning methods as asked for in the last issue of "Orchard and Farm." Nearly all of them were of an exceedingly practical nature, and most of em will soon appear in these columns.

This month let your suggestions be on the line of kitchen conveniences, early every woman has some way of doing the work in her kitchen that she inks is an effective labor saver, and a suggestion from her might lighten e burden of her neighbor.

Prizes as usual will be given for the best suggestions.

The following rules must be observed in writing for this department or attention will be paid to the suggestions:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only.

Not more than two suggestions a month may be sent by one person. Do t send a letter with your suggestion. The suggestion itself is enough.

The editor reserves the right to publish any suggestions, whether or not ey win a prize.

This contest is not confined to California alone, but is open to "Orchard d Farm" subscribers in any State.

Address all your suggestions to Virginia Kirtley, Household Editor, Orchard and Farm," Hearst Building, San Francisco, Cal.

SUGGESTIONS were asked for in the household contest in the February issue of Orchard and Farm in housecleaning methods, and every mail has brought in a flood of replies. So numerous were they and so practical were the suggestions received that in addition to the usual prizes given for the best five replies in each contest Orchard and Farm will send out ten more gifts to those whose hints have been deemed most worthy.

The following are the prize winners in the household exchange this month and the prizes awarded:

First prize — Mrs. Franklin Groves, Milton, Cal., twenty-six piece silver set----------$8.00

Second prize — Mrs. W. A. Adams, Sierraville, Cal., set of six silver tablespoons and six teaspoons-$4.00

Third prize — Mrs. F. P. Smith, Biggs, Cal., set of six silver knives and forks----------$3.50

Fourth prize—Mrs. Fred M. Carlson, Richvale, Cal., silver sugar shell and butter knife----------$2.00

Fifth prize—Mrs. G. M. Miller, Sebastopol, Cal., food chopper---$1.75

Following are the prize winning suggestions:

A Little at a Time.

The best way to clean house is to keep it in a sanitary condition all the time, and by systematic management and a little cleaning every day this condition can be easily accomplished. When there is extra cleaning to be done the washing, ironing and part of the cooking should be done a few days ahead, and simple nourishing meals be prepared on the cleaning days. Special attention should be paid to cellars, sinks and drains. Keep these in a sanitary condition, as the health of the house depends largely upon these things. Unnecessary dusting and polishing of furniture may be put off if necessary. Above all, the house-mother should not fail to take her siesta, or rest time, the same as on other days. By doing a little every day the house is kept in better condition. Confusion is avoided, and the house-mother is not overworked nor the household upset and the family irritable.—Mrs. Franklin Grove.

Cleaning Papered Walls.

Try wiping the papered walls or ceilings with a bag of soft material filled with bran. Clean ones will have to be used very often if the walls are very dirty, for the bran soon becomes black with dirt. Going twice over the surface makes a marked improvement.—Mrs. W. A. Adams.

Stain for Matting.

An excellent stain for matting can be made by using a small portion of common house paint thinned with kerosene. Make a thin fluid and apply with a brush the same as paint. It dries without luster, or stiffness, and gives a soft, woody tone, such as is admired in the high-priced mattings. By buying natural colored mattings and treating in this way, one may have mattings to harmonize with any preferred color scheme at small cost.—Mrs. F. P. Smith.

Stretching Curtains.

Wash lace curtains in the usual way by lightly squeezing with the hands in lukewarm suds. Never use a washboard when washing curtains, or handle them roughly. Rinse thoroughly and to the last rinsing water add a very little boiled starch. Tack sheets on the floor. Spread the curtains on the sheets and carefully smooth until each scallop is in proper place. Then with common pins pin each scallop to the sheets. Leave the curtains until they are thoroughly dry, and when taken up they will look as well as if they had been dried on expensive curtain stretchers. If you have several curtains exactly the same size carefully stretch one upon the other, thus saving time and floor space.—Mrs. Fred M. Carlson.

Cleaning Carpets.

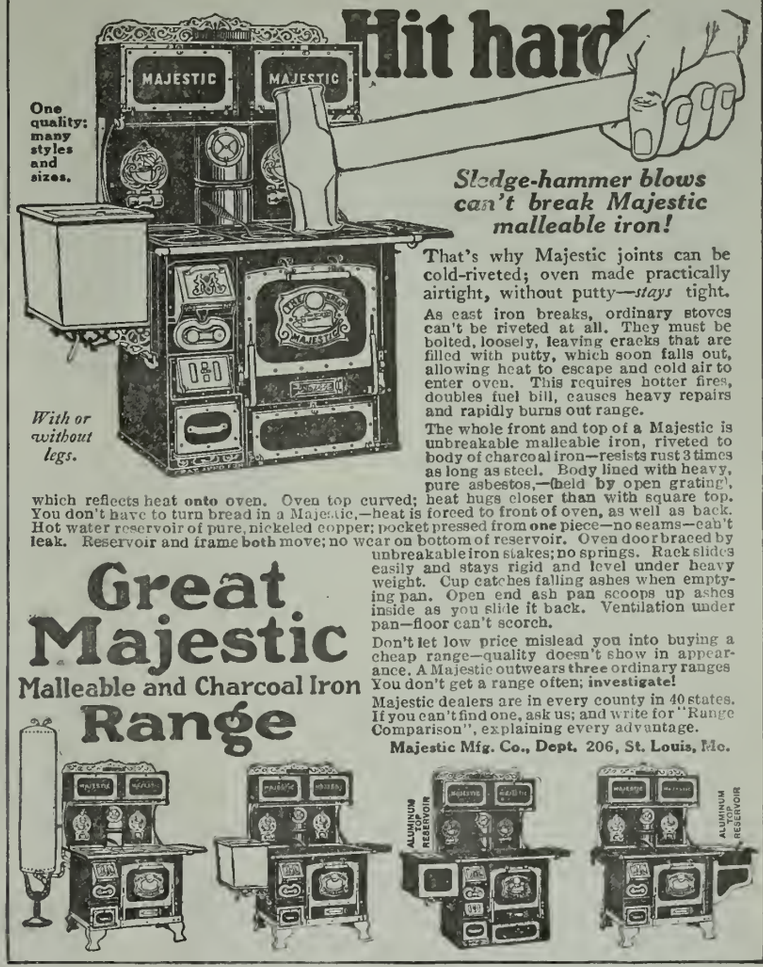
Take up the carpet or rug. Shake it and beat it well, then lay it right side upon the lawn. Dip a clean broom in salt water—use one teacup of salt to two quarts of warm water. Shake the broom well, then sweep the entire surface with strong, vigorous strokes. This will not only remove the last particle of dust, but will brighten and renew the carpet. —Mrs. G. M. Miller.

Good Roads Help Tractors

The way that the construction of good roads brings the benefits of motor trucks to the farms is indicated in Los Angeles county since 300 miles of improved county highway began to be available in that section. Since December 31, 1909, when the good roads agitation began to crystallize into construction there, motor trucks have increased remarkably. On December 31, 1910, only sixty-four were in use, but by the same date two years later there were 1,880, and on December 31, 1913, 3,100 or more, making a ratio of better than 48 to 1 as compared with three years before.

This advance has accompanied a greatly increased territory covered by the trucks. Formerly they were used only in the city. Now there are regular hauls to Riverside and other cities as far as sixty miles distant from Los Angeles. The rates for hauling are also in many instances as low as for short hauls on electric or steam railroads. The continual improvement of the roads will result in the use of motor truck trains, where tractors will pick up trailers at different ranches to haul products to the centers of population.

The advantages of mechanical power are continually being appreciated on the farm, and few agencies have helped more or are of more financial value to the farmer from all standpoints than good roads.



Method of Squirrel and Gopher Extermination Approved By Government

With all the different methods of killing squirrels and gophers, it is hard for any individual to choose the best method the first time. The Government has been experimenting for a number of years with squirrel and gopher exterminators and finally discovered a method which is apparently entirely satisfactory. This means a great deal when it is realized Government statistics show that squirrels and gophers did five million dollars damage in California alone last year.

By means of a machine, called a squirrel exterminator, a preparation called Kilmol is transformed into a gas, which is forced into the burrow by the machine. The gas is heavier than air, settles in the bottom of the burrow, and the animal is asphyxiated. It sounds simple and is simple, because a man can treat each burrow in a minute, and the record of the Government shows 98 to 100 dead squirrels or gophers out of every hundred.

The method is inexpensive and the Kilmol for each burrow costs about one cent. The squirrel exterminator costs $9.75 and Kilmol is sold in one gallon tins at $1.50, five gallon tins at $6.00 with reduced prices for larger quantities. Additional information may be obtained by addressing Herbert F. Dugan, Dept. K., 1170 Sutter St., San Francisco.

A Wonderful Bargain

SEND FOR THESE PANTS 97¢

No.79—A fortunate purchase enables us to offer this special bargain in men's pants. The lot consists of odds and ends of high grade pants, in blues, browns, greys, etc. Every pair is worth at least double the money.

Our Price Postpaid 97¢
Be sure to give size and color desired

We guarantee satisfaction or your money will be promptly refunded, including transportation charges.
You take no chances

Our New Spring and Summer Catalog is Now Ready

The biggest money saving values to be had in EVERYTHING TO WEAR FOR MEN, WOMEN AND CHILDREN. Fully illustrated and described.

We pay the postage *Send for your copy today.*
You cannot afford to be without a copy.

Ask for No. 89. Free Catalog.

Ref.—Cont'l & Comm'l Nat'l Bank, Capital $30,000,000

CHICAGO MAIL ORDER CO.
INDIANA AVE. & 26TH ST. CHICAGO, ILL.

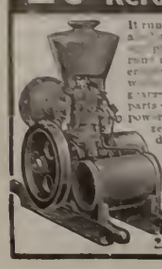
STUDY AT HOME

10,000 Stenographers

now Bookkeepers were advertised for in San Francisco during July. At least 12,000 will be needed in 1916. Why not let us fit YOU for one of these future openings? Write today for our 3 page catalogue, describing 60 home-study courses.

MODERN SCHOOL OF CORRESPONDENCE
Dept. 2 Underwood Building San Francisco

20 Reasons Why You Should Investigate the SANDOW Kerosene Stationary ENGINE



It runs on kerosene (coal oil), gasoline, alcohol or distillate without change of equipment—starts without cranking—runs in either direction—throttle governor—hopper cooled—speed controlled while running—no cams—no valves—no gears—no sprockets—only three moving parts—no table—light weight—great power—starts easily at 40 degrees below zero—complete, ready to run—children operate them—5-year iron-clad guarantee—15-day money-back trial. Sizes 2 to 20 H. P. Send a postal today for free catalog, which shows how Sandow will be useful to you. Our special advertising proposition saves you one-half cost of first engine sold in your county. (161)

Detroit Motor Car Supply Co.
253 Canton Ave., Detroit, Mich.

Useful and Up-to-Date Patterns

No. 5504—Child's Set. Consisting of a yoke dress having bishop or short puff sleeves, a petticoat with or without ruffle, and a sacque in one piece. Sizes ½, 1, 2, 3 and 4 years. For 2 years the dress requires 2 yards 27-inch material; petticoat requires 1¼ yards 27-inch material, with 2 yards 3½-inch embroidery for ruffle, and sacque requires ¾ yard 28-inch material. Price, 15 cents.

Embroidery design No. 11810 and scallop No. 11853; transfer pattern of either number, 10 cents.

No. 5502—Misses' One-Piece "Peg Top" Skirt. Having high waistline and closing in front. Width around lower edge about 1⅛ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 2½ yards 44-inch material, or, if desired without piecing, cut on crosswise fold of material, size 16 will require 2¼ yards 45 inches wide. Price 15 cents.

No. 5512—Ladies' Empire Tea Gown. Having long one-piece sleeves perforated for short sleeves, adjustable shield and two-piece circular skirt. Width around lower edge of skirt about 1½ yards. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 4⅜ yards 44-inch material. Price, 15 cents.

Embroidery design No. 11740, transfer pattern, 15 cents. Embroidery scallop No. 11661, transfer pattern, 15 cents.

No. 5477—Misses' Costume. Having back extending over shoulders on front to form front yoke, adjustable shield, long one-piece plain sleeves perforated for short sleeves, or having bishop sleeves. High waistline and attached four-piece skirt with lower front edge straight or rounded. Width around lower edge of skirt about 1⅝ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 4⅛ yards 36-inch material. Price, 15 cents.

No. 5470—Misses' Shirt Waist. Without lining. Having two styles of collars, long one-piece sleeves with plaited or straight lower edge and perforated for short sleeves. Front of waist may be made straight or rolled back. Sizes 14, 16, 18 and 20 years. Size 16 requires 2⅞ yards 27-inch material. Price, 15 cents.

Embroidery scallop No. 11661. Transfer pattern, 15 cents.

No. 5503—Ladies' Waist. Without lining. Having adjustable shield with high or round neck. Raglan sleeves perforated for shorter length. Vest sewed in with shoulder seam and hanging free. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 1⅞ yards 36-inch material with ¾-yard 18-inch all-over lace for shield and standing collar. Price, 15 cents.

No. 5471—Girls' Dress. Without lining. Having high or V-shaped neck, long one-piece sleeves perforated for short sleeves, and attached straight side-plaited skirt with inserted section at center-front. Closing to left of center-front. Sizes 4, 6, 8, 10, 12 and 14 years. As illustrated, size 8 requires 2¾ yards 36-inch material with ⅝-yard 44-inch contrasting material to trim. Price, 15 cents.

Braiding design No. 11290. Transfer pattern, 10 cents.

No. 5505—Ladies' Waist. Without lining. Having adjustable shield and long one-piece sleeves perforated for short sleeves. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 2¼ yards 36-inch material with ⅝-yard 18-inch all-over net for shield and standing collar. Price, 15 cents.

Embroidery design No. 11900. Transfer pattern, containing 16 different sprays, 10 cents.

No. 5479—Misses' Side-Closing Knickerbocker Drawers. Sizes 14, 16, 18 and 20 years. Size 16 requires 1⅞ yards 36-inch material. Price, 10 cents.

Address all pattern orders to Virginia Kirtley, Household Department, "Orchard and Farm," Hearst Bldg., San Francisco, Calif.

In the Evening

The family is in the living room—everybody tired of reading and talking. No one feels like playing the piano. A bored, listless silence fills the room. One by one they give up and go to bed.

A Victrola would solve the problem. The whole world loves music. At your command Caruso will sing—De Wolf Hopper tell side-splitting stories. You can sit back in your favorite chair and hear the soft strains of "Traumerei," the stirring martial music of "Faust" or the tempting melody of "King Chanticleer."

The machine shown is a Victrola VIII.

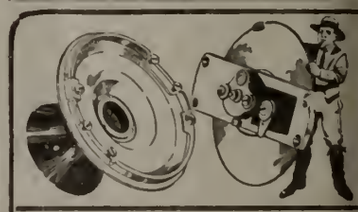
As an investment for your family's pleasure a Victrola is unequaled. Did you know you could buy one for as little as fifteen dollars? From that they range to two hundred-fifty.

Mail the coupon and a catalog giving prices and full information will be sent to you.

BYRON MAUZY
Everything in Music.
250 Stockton St., San Francisco.

Byron Mauzy,
San Francisco.
Kindly send your catalog to
Name .....
P. O. Address.....
City..... State .....

Parcel Post will bring them to your door.



Be sure it's a Kellogg
with the Easy Talking Transmitter

When you have the Kellogg Telephone with its Plain Talking Transmitter, your neighbor talks to you easily, and you don't have to strain the least bit to hear him. When you talk to him, you don't have to holler as though you were calling the cows home.

The Kellogg Transmitter has been made specially sensitive so as to catch the slightest sound yet is wonderfully strong and lasting.

The Kellogg Transmitter
Gets Every Word You Say

and so does your neighbor or the man taking your order in the distant city.

Right now *Kellogg Telephones*, every one fitted with these great transmitters, are serving with entire satisfaction 4,000,000 farmers throughout the United States.

THE KELLOGG GUARANTEE
The Kellogg Transmitter is guaranteed superior to any other make on the market, and any part showing an inherent defect within five years will be repaired or replaced Free of Charge on being returned to the Company.

Let us mail you something telling in a real interesting manner more about this. Drop a postcard today for free bulletin "B".

KELLOGG SWITCHBOARD & SUPPLY CO.
86 3d STREET, SAN FRANCISCO, CALIF.

STERLING RAMS PUMP WATER

The STERLING is an IMPROVED HYDRAULIC RAM made in all sizes for irrigation projects, city water works, farm and home water supplies, etc. Every Ram guaranteed. Capacity 2 to 5500 gals. per minute. Prices from $25 up.

Write for Catalogue.
HILL HYDRAULIC MACHINERY CO.
634 Pacific Block, SEATTLE, WASH.

Hints for the Sewing Room

BIAS Fold for Seam Covering.—Cut a bias piece the right width for your sewing machine and run it through the binder without any thread in the needle. You will have the edges turned under much more evenly and quicker than could be done by hand.—Mrs. A. G. W., Hood River.

Use for Spools.—Save the empty spools. Wind bits of braid, lace or insertion on them and it will always be handy and clean.—Mrs. M. L. P., Raymond.

Keeping Yarn from Tangling.—When making fancy work and using yarn or thread from a ball or spool, put the latter into your work bag and pull the draw string almost tight. Or better still, put the ball into a paper bag and tie the neck almost tight. This can be dropped beside one's chair and the yarn will be clean and not tangle.—Mrs. T. A., Sierraville.

Doubling Life of Sheets.—Hold sheets up to the light and look for any signs of their getting thin down the middle. Do not wait till they are thin. If they show signs of wear fold the sheet in half lengthwise. Cut carefully down the fold. Sew the two selvage edges neatly with overcast stiches. Make a good hem down each side.—Mrs. R. S. K., Santa Rosa.

Sewing Room Economy.—Before purchasing goods for a dress place on a table a piece of muslin, or gingham, the width of the goods required. Measure on this with the pattern of the dress contemplated. You can determine the exact amount of material required and save money when buying.—Mrs. L. C. N., Yountville.

Table Doilies.—Use wrapping twine for crocheting table doilies. This makes a strong, durable doilie. One may use a pretty oilcloth for a table cover when desirable by using these doilies to keep hot dishes from injuring the oilcloth.—Mrs. L. B. L., Alsea, Ore.

Clothes Pin Bag.—Make a bag of convenient size from some heavy material. At each end at the top of the bag sew a large hook. This can be put on the clothes line and slid along conveniently as the clothes are hung out.—G. B. McC., Mendocino.

Worn Bed Spreads.—When bed spreads get worn, and they usually wear at the outer edges, cut the best part out and make towels of it. Hem them nicely. They are splendid for the bathroom.—Mrs. W. K., Lowell Hill.

Buttons on Wash Waists.—If one wishes nice buttons on wash waists, make buttonholes on both edges of the waist and sew the buttons on a tape at the distance to match the buttonholes. By tacking the tape in place with a few stitches the edges can be buttoned together and the tape and buttons removed when the waist goes to the laundry.—Mrs. C. R. F., San Jose.

Mending Stockings.—When the children's stockings are worn at the knees cut off the legs at the ankle. Turn half way around and join at the feet again with a smooth seam. This brings the worn part under the knee where it will not show and where there is no wear.—Mrs. E. W. A., San Jose.

Using Old Material.—From a heavy white linen skirt, out of date because of its width and many gores, I made six under-waists for my little son. Of course it required much piecing, but this only strengthened the garment, as I stitched the seams on the right side, then opened and pressed them and covered with strips of cotton tape stitched on either side. A row of tape around the waist held the buttons, and at the waist line under each armhole four-inch long strips of tape were folded and stitched in position for hose supporters. By first fitting my pattern and making as described, I had six comfortable, strong and neat looking waists for less than the cost of one.—Mrs. E. M. K., Madera.

Uses for Flour Sacks—A flour sack makes a pretty table cover. Rip the seams and wash, then finish the edges with drawn work, or hemstiching, or embroidery scollops. It will look like linen and be very serviceable. The material used for flour sacks makes excellent underwear for children.—Mrs. W. B. M., Geyserville.

Darning Stockings.—Use silk finish crochet cotton when darning stockings. It is much more satisfactory than the old darning cotton, as it does not knot so easily; makes a better darn and wears longer.—Mrs. H. W. A., Lincoln.

Sewing on Hooks.—Sew securely through both eyes, then wrap thread several times around neck of hook and sew through the wrapped thread. The hook will not pull out of place.—Mrs. R. F. B., Orland.

Use for Old Stockings.—Old cotton stockings should not be thrown away. A useful pair of little tights can be made for a creeping baby, or an older child, to wear under little dresses, like bloomers, by cutting off the feet, leaving the legs about fourteen inches long. Then slit the legs from the top down about eight inches and join the two with a diamond-shaped piece in the crotch.—Mrs. C. M. L., Sebastopol.

Making Rooms Cheerful.—In almost every house there is a dark and rather gloomy north room that might be made bright and cheerful. A bolt of common muslin dyed yellow will transform the room into a bower of sunshine. Make full length curtains of this material for the windows. A row of ball fringe down the edges and across the bottom will give an excellent effect. Make a bed spread by using two widths of the material and put a scarf of the same material on the dresser and you will be pleased with the cheerful effect.—B. E. O'B., Portland.

An Invalid's Table.—If the small table that stands beside the invalid's bed or chair has a glass top it will be much more satisfactory than if it is covered with cloth. The glass should be of rather heavy weight and cut the exact size of the top of the table. Slip a pretty piece of flowered cretonne underneath the glass, and it will be doubly attractive. This is very easy to keep clean when there are medicines to be set upon it, and the base of the flower vase is apt to be wet; no table is nicer or more sanitary than this.—S. H., Occidental.

Details that Count.—Neglect of the small details in finishing a tailor-made garment often gives a "home-made" look to an otherwise well-fitting garment. Before stitching seams always press under damp muslin, as much neater stitching may be done on account of the flattened surface. Remove bastings and press again in same manner when garment is completed. Before turning collars and cuffs, slash outer seam edge close to stitching, every half inch, and "cut" all corners by taking a tiny three-cornered piece from seam edge. This prevents the bunglesome appearance of the corners when turned and stitched. If possible, have a tailor make all button holes, but if you attempt them, practice well on suit material. Run small stitches around hole before cutting, and when finished baste edges together until garment is pressed, to preserve the shape.—Mrs. E. M. K., Madera.

HARDWOOD FLOORS

Our New Process Hardwood floors. Beautiful, clean, sanitary. Require no special skill to lay. Cost less than carpets. Do not wear out.

Mail us your orders or send size of rooms you wish covered and we will mail quotations and details. Best Oak floor for a room 14x14 costs only $14.

We also furnish hardwood trim only slightly above cost of soft wood.

E. A. HOWARD & CO.
20 HOWARD ST.,
San Francisco, Cal.

Burpee's Seeds are supplied every year direct to more American planters than are the seeds of any other growers. Do your seeds come direct from Philadelphia? If not, we should like to make your acquaintance. Simply send us your address (a postal card will do) and you will receive **Burpee's Annual for 1914**,—a bright book of 182 pages, which has long been recognized as "The Leading American Seed Catalog." Kindly **write to-day!** Address

W. ATLEE BURPEE & CO., Burpee Buildings, Philadelphia

The Spirit of Service

WHEN the land is storm-swept, when trains are stalled and roads are blocked, the telephone trouble-hunter with snow shoes and climbers makes his lonely fight to keep the wire highways open.

These men can be trusted to face hardship and danger, because they realize that snow-bound farms, homes and cities must be kept in touch with the world.

This same spirit of service animates the whole Bell telephone system. The linemen show it when they carry the wires across mountains and wilderness. It is found in the girl at the switchboard who sticks to her post despite fire or flood. It inspires the leaders of the telephone forces, who are finally responsible to the public for good service.

This spirit of service is found in the recent rearrangement of the telephone business to conform with present public policy, without recourse to courts.

The Bell System has grown to be one of the largest corporations in the country, in response to the telephone needs of the public, and must keep up with increasing demands.

However large it may become, this corporation will always be responsive to the needs of the people, because it is animated by the spirit of service. It has shown that men and women, co-operating for a great purpose, may be as good citizens collectively as individually.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

A Farm Home Sewer System

By Dennis H. Stovall.

NO one particular feature can add more to the general comfort and convenience, as well as happiness and health of country life, than a farm home sewer system. It is something that any farmer with ordinary ability can himself install, and its cost is not prohibitive. We placed such a system in our Coast Mountain country home, and after three years of use would not give it up for many times its cost. Such a system, in connection with a water supply delivered through pipes under pressure, allows every possible convenience and comfort that the city could afford, such as drainage for the kitchen sink; drainage for the stationary wash tubs and for the lavatory; it allows, also, an indoor toilet, a bathroom and complete drainage for all the waste from the house, of whatever nature, such waste being first carried to a septic tank and the overflow used to enrich a flower bed or garden. Such a system relieves the women folks of all the hard drudgery of carrying out waste water in buckets and pails; it does away with the ill-smelling and most unhealthful closet and makes the farm home just as comfortable as a city home could possibly be.

The placing of such a system requires a water supply under pressure. We secured ours by running a pipe line, 2,000 feet in length, and bringing water down from a mountain spring. This is conveyed to the house under gage pressure of 22 pounds—not very strong, yet with force enough for all needed purposes. After getting the water to the house, and reducing the pipe line to one-half inch, it was conveyed to the laundry room, kitchen and bathroom, the latter being combined with the toilet. We had purchased a complete plumbing outfit, including a hot water tank for a hot and cold water system, kitchen sink, stationary wash tray, bath tub, toilet and fixtures, and the required number of feet of five-inch drain or waste pipe with all the elbows, joints, unions, faucets, etc., needed for the whole system. Knowing the size of the house, dimensions of the rooms to be reached, and length of line needed, we calculated beforehand just how much pipe and fittings would be needed, allowing plenty as a margin of safety. That the hot water tank and toilet might be properly placed, we secured the help of an expert plumber for one day only. With this little assistance we were able to complete the job ourselves and thus keep the cost down.

As to the essential features of the system, let it be said that the main difference beween this and any of those used in town is the sewer itself. We made two separate drains, one to take care of the water from the kitchen sink, lavatory and wash tubs and the other to take off the waste from the toilet and bath. Now, the former we have found requires nothing more than to be conveyed underground, and with ample fall, from the house down into the garden and allowed to flow over the flower beds and growing plants. Every particle of the waste water is absorbed and used in this manner. A vent pipe connecting with the line at the kitchen, disposes of all odors and keeps the drain line free of obnoxious gases.

The waste from the toilet and bath are cared for differently. A five-inch waste pipe conveys the waste down a slope from the house to a single-chamber aseptic tank. This entire affair was built by ourselves. The tank itself has four-inch walls of concrete and is capped over with the same material. The inside dimensions of the chamber are five feet wide, five feet long and six feet deep. The water and waste is admitted to one side, about a foot from the upper edge. A drain is afforded at practically the same level on the other side. The chamber has an air-tight cover, and both the admission pipe and the outlet pipe have curved ends, these being nothing more than elbows to fit the five-inch line. The reason for this is that by so doing the chamber, when filled, will keep the bended pipe ends always under water, and being air-tight, the accumulating bacteria destroy themselves. There is no smell, no offensive odors of any kind, and hence no disease. The tank cost us, for material, just $8, and the entire cost of the sewer system, not counting the bath tub, sink and water line, was not over $75. The entire cost of the water and sewer system was kept below $200.

Feeding and Care of Geese

Geese are one of the cheapest and easiest of all domestic fowls to raise. They require little shelter at any time, and if given plenty of pasture, will gather the largest portion of their food from the fields. They are easily and quickly fattened for market and bring good prices. Geese for breeding purposes should be purchased in the fall.

This is the method for managing breeding and market geese: Never mate more than two females to each gander. Never use females less than 2 or ganders more than 4 years of age. They are allowed to run in a pasture where they have plenty of grass to eat and water to swim in. In winter and during the laying season feed them lightly the following ration: Bran, four parts; shorts, two parts; cornmeal, one part; and in winter cut clover, steamed, four parts, is added. A goose will lay thirty to forty eggs in a season if she is allowed to set. The eggs require thirty days for incubation, and invariably hatch well.

Goslings are removed from the incubators as soon as dry, and placed in brooders where the heat for the first twenty-four hours is ninety degrees. After the first twenty-four hours the heat is reduced daily until the goslings are 10 to 15 days old. Beginning the third morning after hatching the gosslings are fed as follows, four times daily, by measure: Bran, one part; rolled oats, one part; cornmeal shorts, one part. This mixture is dampened with skim milk until it will crumble. Grass, grit, and drinking water are always before them.

Water is given in fountains, so they cannot get into it. They are fed as mentioned until they are 8 weeks old, when those for market are closely confined to be fattened, and fed as follows, three times daily, all they will eat: Bran, two parts; shorts, one part; oil meal and beef scraps, one part; cornmeal, one part, dampened until it will crumble. Whole corn is frequently given. Green food, grit and water are always before them.

Bones for Chickens

When living is so high everything should be utilized on the farm. Do not underestimate the value of burned bones for the chickens. Many bones will accumulate from the table and these, if burned, will be much relished by the fowls, as they contain elements not obtained in any other food. An excellent place to burn them is in the middle hole of the range—on the frame work just over the oven. When they are brittle, break them up, mix with dried, crushed egg-shells, and watch the eagerness with which the fowls pick it up.—Mrs. S. H., Occidental.

Garden Tools for Women

By Mrs. J. Y. Beaty

THE choice of tools for work in the garden is especially important when they are to be used by women. I cannot do as much work in the garden when I attempt to use the tools commonly used by men because they are too heavy.

I have an outfit of my own which I find much better. The hoe I use is very small. It is exactly the same width as the larger hoes, but the blade is just about a third as deep. This makes it light and easy to handle and by keeping it sharp I am able to do at least twice as much work and with much less effort.

I use a light grade rake, well made, and use it a great deal when the seed bed is being prepared.

A trowel with a rounded blade is used a great deal in planting time. Instead of using strings for laying out the rows, I use a long six-inch board. This is laid where the row is to be made and the trowel or hoe is run along the edge of it. As I make the furrow in this way I stand on the board and thus hold it firm.

When it comes time for cultivation, two tools are much better than the ordinary hoe—one is the claw cultivator, which is pulled towards you, and the other is the wheel hoe. The claw cultivator is very easy to use and is very good indeed for pulverizing the soil. If the weeds are allowed to grow a little tall, however, it is not very successful in digging them with.

For freeing the garden from large weeds, the wheel hoe is quite essential. It is just as easy and as rapid to use as the claw cultivator. In about half an hour I can cultivate my whole garden either with the wheel hoe or with the claw cultivator.

The wheel hoe has several attachments and can be adjusted for most any kind of work in the garden from plowing to hilling the plants.

With a wheel hoe a medium-sized garden can be cultivated in an hour.

Chicks at University Farm

The hatching period is on and many incubator chicks are starting their course in the present artificial and highly civilized system. Thus one or two little things on chick raising at the University Farm at Davis, where agriculture should be as scientific and effective as possible, might be interesting to other chick raisers.

An interesting fact is that the floor of each brooder house is covered with about two or three inches of chopped alfalfa hay, which lasts from the time the chicks are put in until they graduate to hardier surroundings. The grain ration is mixed thoroughly with this, and every chick that wants to eat has to scratch for his dinner. He is sure to get enough if he works enough and such lively kicking was never seen elsewhere. If they kept it up the cockerels should go to the table all drumsticks, if that is where they land up. It is fine for vitality.

There is also a dry mash present at all times. This is covered with wire of about half inch mesh or less, so that the chicks cannot scratch it out. The box containing it is long and narrow and as the chicks eat the mash the wire sinks also. Thus it provides a self-feeder and there is no waste.

Only about 150 chicks are kept in one compartment and, as they have lots of room, there is no toe picking and excellent results are secured.

Big Horse Deal

The Utah Construction Company purchased, early in this month, 126 head of heavy horses from the B. T. Spalding ranch at Doyle, Lassen county, California. The price paid was $210 per head; over $25,000 for the lot.

This hardly confirms the prophecies so freely made that there is no demand for horses at a fair price. These horses go north into Southern Oregon to be used on the work of extending the new railroads in that district.

Making Over Garments.—The material in garments that have become shabby can be made over with good effect if care is taken. Rip the seams of the garments carefully, then press the material. A good deal depends upon the pressing and the cleaning. Use up-to-date patterns when cutting out the new suit.—Mrs. S. G., Cedarville.

Ironing Board Bag.—Make a bag about eight by ten inches of some strong material and tack it securely to the ironing board near where the iron is placed. The bag should have a flap to fasten with a button and a tag with a buttonhole at the bottom, so it can be fastened flat to the board when not in use. In this bag can be kept the holders, iron stand, wax, polishers and cleaners.—Mrs. J. P., Oleta.

THE BANDBOX

—By Louis Joseph Vance—

CHAPTER XIV—Continued.

NEELING at the head of the stair-case and bending over, with an arm ound the banister for support, she ould see a portion of the kitchen. nd what she saw only confirmed the stimony of the snores. The wom- had moved indoors to read; an oil mp stood by her shoulder, on the ble; her chair was well tilted, her ad resting against its back; an old agazine lay open on her lap; her in had fallen; from her mouth is- ed dissonant chords of contentment.

Eleanor drew back, rose and felt r way to the long corridor. Down is she stole as silently as any ghost, holly indifferent to the eerie influ- ces of the desolate place, spectrally uminated as it was with faded equers of moonlight falling through ngy windows, alive as it was with e groans and complaints of uneasy anks and timbers and the frou-frou, e that of silken skirts, of rats and ice scuttling between its flimsy alls. These counted for nothing to r; but all her soul hung on the con- nuance of that noise of snoring in e kitchen; and time and again she used and listened, breathless, until re it was holding on without inter- ption.

Gaining at length the head of the airs, she picked her way down very ently, her heart thumping madly as e burden of her weight wrung from ch individual step its personal pro- st, loud enough (she felt) to wake e dead in their graves; but not loud ough, it seemed, to disturb the umbers of the excellent, if untrust- orthy, Mrs. Clover.

At length she had gained the newel- ost and abstracted the key. The retaste of success was sweet. Paus- g only long enough to unlatch the ont door, for escape in emergency, e darted through the hall, behind e counter, into the little room.

And still Mrs. Clover slept aloud.

Kneeling, Eleanor fitted the key to e lock. Happily, it was well oiled nd in excellent working order. The umblers gave to the insistence of the ards with the softest of dull clicks. he grasped the handle, and the heavy oor swung wide without a murmur.

And then she paused, at a loss. It as densely dark in the little room, nd she required to be able to see hat she was about, if she were to ick out the Cadogan collar.

It was risky, a hazardous chance, ut she determined to run it. The amp that Mrs. Clover had left for er employer was too convenient to e rejected. Eleanor brought it into he room, carefully shut the door to revent the light being visible from he hall, should Mrs. Clover wake and miss her, placed the lamp on the floor efore the safe and lighted it.

As its soft illumination disclosed he interior of the antiquated strong- ox, the girl uttered a low cry of lismay. To pick out what she sought rom that accumulation (even if it were really there) would be the work f hours—barring a most happy and nlikely stroke of fortune.

The interior of the safe was di- vided into some twelve pigeon-holes, ll closely packed with parcels of various sizes—brown-paper parcels, neatly wrapped and tied with cord, each as neatly labeled in ink with an indecipherable hieroglyphic: pre- sumably a means of identification to one intimate with the code.

But Eleanor possessed no means of telling one package from another; they were all so similar to one an- other in everything save size, in which they differed only slightly, hardly materially.

None the less, having dared so much, she wasn't of the stuff to give up the attempt without at least a little effort to find what she sought. And impulsively she selected the first package that fell under her hand, with nervous fingers unwrapped it and—found herself admiring an ex- tremely handsome diamond brooch.

As if it had been a handful of peb- bles, she cast it from her to blaze despised upon the mean plank floor- ing, and selected another package.

It contained rings—three gold rings set with solitaire diamonds. They shared the fate of the brooch.

The next packet held a watch. This, too, she dropped contemptuously, hur- rying on.

She had no method, other than to take the uppermost packets from each pigeonhole, on the theory that the necklace had been one of the last articles intrusted to the safe. And that there was some sense in this method was demonstrated when she opened the ninth package—or pos- sibly the twelfth: she was too busy and excited to keep any sort of count.

This last packet, however, revealed the Cadogan collar.

With a little, thankful sigh the girl secreted the thing in the bosom of her dress and prepared to rise.

Behind her a board creaked and the doorlatch clicked. Still sitting—heart in her mouth, breath at a stand- still, blood chilling with fright—she turned in time to see the door open and the face and figure of her father as he stood looking down at her, his eyes blinking in the glare of light that painted a gleam along the polished barrel of the weapon in his hand.

CHAPTER XV

The Enemy's Hand.

IN spite of the somewhat abrupt and cavalier fashion in which Staff had parted from Alison at the St. Simon, he was obliged to meet her again that afternoon at the offices of Jules Max, to discuss and select the cast for "A Single Woman." The memory which each retained of their earlier meeting naturally rankled, and the amenities suffered proportionate- ly. In justice to Staff it must be set down that he wasn't the aggressor; his contract with Max stipulated that he should have the deciding word in the selection of the cast—aside from the leading role, of course—and when Alison chose, as she invariably did, to try to usurp that function, the author merely stood calmly and with imperturbable courtesy upon his rights. In consequence, it was Alison who made the conference so stormy a one that Max more than once threatened to tear his hair, and as a matter of fact did make futile grabs at the meager fringe surrounding his bald spot. So the meeting inevitably ended in an armed truce, with no business accomplished: Staff offering to release Max from his contract to produce, the manager frantically beg- ging him to do nothing of the sort, and Alison making vague but dis- quieting remarks about her inclina- tion to "rest." . . .

Staff dined alone, with disgust of his trade for a sauce to his food. And, being a man—which is as much as to say, a creature without much real un- derstanding of his own private emo- tional existence—he wagged his head in solemn amazement because he had once thought he could love a wom- an like that.

Now Eleanor Searle was a different sort of a girl altogether. . . .

Not that he had any right to think of her in that light; only, Alison had chosen to seem jealous of the girl. Heaven alone (he called it honestly to witness) knew why. . . .

Not that he cared whether Alison were jealous or not. . . .

But he was surprised at his solici- tude for Miss Searle—now that Alison had made him think of her. He was really more anxious about her than he had suspected. She had seemed to like him, the few times they'd met; and he had liked her very well in- deed; it's refreshing to meet a wom- an in whom beauty and sensibility are combined; the combination's piquant, when you come to consider how un- common it is. . . .

He didn't believe for an instant that she had meant to run away with the Cadogan collar; and he hoped fervently that she hadn't been in- volved in any serious trouble by the qualified thing. Furthermore, he candidly wished he might be per- mitted to help extricate her, if she were really tangled up in any un- pleasantness.

Such, at all events, was the general tone of his meditations throughout dinner and his homeward stroll down Fifth avenue from Forty-fourth street, a stroll in which he cast him- self for the part of the misprized hero; and made himself look it to the life by sticking his hands in his pockets, carrying his cane at a despondent angle beneath one arm, resting his chin on his chest—or as nearly there as was practicable if he cared to escape being strangled by his collar—and permitting a cigar- ette to dangle dejectedly from his lips. . . .

He arrived in front of his lodgings at 9 o'clock or something later. And as he started up the brownstone stoop he became aware of a disconsolate little figure hunched up on the top- most step; which was Mr. Iff.

The little man had his chin in his hands and his hat pulled down over his eyes. He rose as Staff came up the steps and gave him good evening in a spiritless tone which he promptly remedied by the acid observation:

"It's a pity you wouldn't try to be home when I call. Here you've kept me waiting the best part of an hour."

"Sorry," said Staff gravely; "but why stand on ceremony at this late day? My bedroom windows are still open; I left 'em so, fancying you might prefer to come in that way."

"It's a pity," commented Iff, fol- lowing him upstairs, "you can't do something for that oratorical weak- ness of yours. Ever try choking it down? Or would that make you ill?"

With which he seemed content to abandon persiflage, satisfied that his average for acerbity was still high. "Besides," he said peaceably, "I'm all dressed up pretty now, and it doesn't look right for a respectable member of society to be pulling off second- story man stunts."

Staff led him into the study, turned on the lights, then looked his guest over.

So far as his person was involved, it was evident that Iff had employed Staff's American money to advantage. He wore, with the look of one fresh from thorough grooming at a Turk- ish bath, a new suit of dark clothes. But when he had thrown aside his soft felt hat, his face showed drawn, pinched and haggard, the face of a man whose sufferings are of the spirit rather than of the body. Loss of sleep might have accounted in part for that expression, but not for all of it.

"What's the matter?" demanded Staff, deeply concerned.

"You ask me that!" said Iff im- patiently. He threw himself at length upon the divan. "Haven't you been to the St. Simon? Don't you know what has happened? Well, so have I, and so do I."

"Well . . . ?"

Iff raised himself on his elbow to stare at Staff as if questioning his sanity.

"You know she's gone—that she's in his hands—and you have the face to stand there and say 'Wel-l?' to me!" he snapped.

"But—good Lord, man!—what is Miss Searle to you that you should get so excited about her disappear- ance, even assuming what we're not sure of—that she decamped with Ismay?"

"She's only everything to me," said Iff quietly; "she's my daughter."

Staff slumped suddenly into a chair.

"You're serious about that?" he gasped.

"It's not a matter I care to joke about," said the little man gloomily.

"But why didn't you tell a fel- low . . . !"

"Why should I—until now? You mustn't forget that you sat in this room not twenty-four hours ago and listened to me retail what I admit sounded like the damnedest farrago of lies that was ever invented since the world began; and because you were a good fellow and a gentleman, you stood for it—gave me the benefit of the doubt. And at that I hadn't told you half. Why? Why, because I felt I had put sufficient strain upon your credulity for one session at least."

"Yes—I know," Staff agreed, be- wildered; "but—but Miss Searle—your daughter—!"

"That's a hard one for you to swallow——what? I don't blame you. But it's true. And that's why I'm all worked up—half crazed by my knowl- edge that that infamous blackguard has managed to deceive her and make her believe he is me—myself—her father."

"But what makes you think that?"

"Oh, I've his word for it. Read!"

Iff whipped an envelope from his pocket and flipped it over to Staff. "He knew, of course, where I get my letters when in town, and took a chance of that catching me there and poisoning the sunlight for me."

Staff turned the envelope over in his hands, remarking the name, ad- dress, postmark and special delivery stamp. "Mailed at Hartford, Con- necticut, at 9 this morning," he com- mented.

"Read it," insisted Iff irritably.

Staff withdrew the inclosure: a sin- gle sheet of note-paper with a few words scrawled on one side.

"'I've got her,'" he read aloud. "'She thinks I'm you. Is this suf- ficient warning to you to keep out of this game? If not—you know what to expect.'"

He looked from the note back to Iff. "What does he mean by that?"

"How can I tell? It's a threat, and that's enough for me; he's capable of anything fiendish enough to amuse him." He shook his clenched fists im- potently above his head. "Oh, if ever again I get within arm's length of the hound . . . !"

"Look here," said Staff; "I'm a good deal in the dark about this busi- ness. You've got to calm yourself and help me out. Now you say Miss Searle's your daughter; yet you were on the ship together and didn't recog- nize one another—at least, so far as I could see."

"You don't see everything," said Iff; "but at that, you're right—she didn't recognize me. She hasn't for years—seven years, to be exact. It was seven years ago that she ran away from me and changed her name. And it was all his doing! I've told you that Ismay has, in his jocular

way, made a practice of casting suspicion on me. Well, the thing got so bad that he made her believe I was the criminal in the family. So, being the right sort of a girl, she couldn't live with me any longer and she just naturally shook me—went to Paris to study singing and fit herself to earn a living. I followed her, pleaded with her, but she couldn't be made to understand; so I had to give it up. And that was when I registered my oath to follow this cur to the four corners of the earth, if need be, and wait my chance to trip him up, expose him and clear myself. And now he's finding the going a bit rough, thanks to my public-spirited endeavors, and he takes this means of tying my hands!"

"I should think," said Staff, "you'd have shot him long before this."

"Precisely," agreed Iff mockingly. "That's just where the bone-headedness comes in that so endears you to your friends. If I killed him, where would be my chance to prove I hadn't been guilty of the crimes he's laid at my door? He's realized that, all along. . . . I passed him on deck one night, coming over; it was midnight and we were alone; the temptation to lay hands on him and drop him overboard was almost irresistible—and he knew it and laughed in my face! . . . And that's the true reason why I didn't accuse him when I was charged with the theft of the necklace—because I couldn't prove anything and a trumped-up accusation that fell through would only make my case the worse in Nelly's sight. . . But I'll get him yet!"

"Have you thought of going to Hartford?"

"I'm no such fool. If that letter was posted in Hartford this morning, it means that Ismay's in Philadelphia."

"But isn't he wise enough to know you'd think just that?"

Iff sat up with a flush of excitement. "By George!" he cried—"there's something in that!"

"It's a chance," said Staff thoughtfully.

The little man jumped up and began to pace the floor. To and fro, from the hall-door to the windows, he strode. At perhaps the seventh turn at the windows he paused, looking out, then moved quickly back to Staff's side.

"Taxicab stopping outside," he said in a low voice; "woman getting out—Miss Landis, I think. If you don't mind, I'll dodge into your bedroom."

"By all means," assented his host, rising.

Iff swung out of sight into the back room as Staff went to and opened the hall-door.

Alison had just gained the head of the stairs. She came to the study door, moving with her indolent grace, acknowledging his greeting with an insolent, cool nod.

"Not too late, I trust?" she said enigmatically.

"For what?" asked Staff, puzzled.

"For this appointment," she said, extending a folded hit of paper.

"Appointment?" he repeated with the rising inflection, taking the paper.

"It was delivered at my hotel half an hour ago," she told him. "I presumed you . . ."

"No," said Staff. "Half a minute. . . ."

He shut the door and unfolded the note. The paper and the chirography, he noticed, were identical with those of the note received by Iff from Hartford. With this settled to his satisfaction, he read the contents aloud, raising his voice a trifle for the benefit of the listener in the back room.

If Miss Landis wishes to arrange for the return of the Cadogan collar, will she be kind enough to call at Mr. Staff's rooms in Thirtieth Street at a quarter to ten to-night.

N. B.—Any attempt to bring the police or private detectives or other outsiders into the negotiations will be instantly known to the writer and—there won't be any party.

"Unsigned," said Staff reflectively.

"Well?" demanded Alison, seating herself.

"Curious," remarked Staff, still thinking.

"Well?" she iterated less patiently. "Is it a practical joke?"

"No," he said, smiling; "to me it looks like business."

"You mean that the thief intends to come here—to bargain with me?"

"I should fancy so, from what he says. . . . And," Staff added, crossing to his desk, "forewarned is forearmed."

He bent over and pulled out the drawer containing his revolver At the same moment he heard Alison catch her breath sharply, and a man's voice replied to his platitude.

"Not always," it said crisply. "Be good enough to leave that gun lay—just hold up your hands, where I can see them, and come away from that desk."

Staff laughed shortly and swung smartly round, exposing empty hands. In the brief instant in which his back had been turned a man had let himself into the study from the hall. He stood now with his back to the door, covering Staff with an automatic pistol.

"Come away," he said in a peremptory tone, emphasising his meaning with a flourish of the weapon. "Over here—by Miss Landis, if you please."

Quietly Staff obeyed. He had knocked about the world long enough to recognize the tone of a man talking business with a gun. He placed himself beside Allison's chair and waited, wondering.

Indeed, he was very much perplexed and disturbed. For the first time since Iff had won his confidence against his better judgment, his faith in the little man was being shaken. This high-handed intruder was so close a counterpart of Mr Iff that one had to look twice to distinguish the difference, and then found the points of variance negligihle—so much so that the fellow might well be Iff in different clothing and another manner. And Iff could easily have slipped out of the bedroom by its hall door Only to shift his clothes so quickly he would have to be a lightning-change artist of exceptional ahility.

On the whole, Staff decided, this couldn't be Iff. And yet . . . and yet . . .

"You may put up that pistol," he said coolly. "I'm not going to jump you, so it's unnecessary. Besides, it's bad form with a lady present And finally, if you should happen to let it off the racket would hring the police down on you more quickly than you'd like, I fancy."

The man grinned and shoved the weapon into a pocket from which its grip projected handily.

"Something in what you say," he assented. "Besides, I'm quick, surprisingly quick with my hands."

"Part of your professional equipment, no doubt," commented Staff indifferently.

"Admit it," said the other easily. He turned his attention to Alison. "Well, Miss Landis . . . ?"

"Well, Mr. Iff?" she returned in the same tone.

"No," he corrected, "not Iff—Ismay."

"So you've changed identities again!"

"Surely you don't mind?" he said, grinning over the evasion.

"But you denied being Ismay aboard the Autocratic."

"My dear lady, you couldn't reasonably expect me to plead guilty to a crime which I had not yet committed."

"Oh, get down to business!" Staff interrupted impatiently. "You're wasting time—yours as well as ours."

"Peevish person, your friend," Is-

STUDY AT HOME

And Acquire a Business Training

COMMERCIAL COURSE embraces Retail, Wholesale, Commission, Corporation, Banking and Farm Bookkeeping, Business Arithmetic, Business English, Letter Writing, Penmanship, Spelling and the use of all commercial papers.

STENOGRAPHIC COURSE embraces Shorthand, Typewriting, Spelling, Business English, Penmanship and Legal Forms.

SPECIAL COURSES given in above subjects.

For information and tuition rates write to

HEALD'S HOME STUDY SCHOOL

OAKLAND, CALIFORNIA.

Madam—

When the problem of "what shall we have for dinner" again presents itself—just remember what a zest

Ghirardelli's Ground Chocolate

adds to any meal. It is ready at a moment's notice, it is liked by every member of the family, it is easily digested—it is, on the whole, a perfect home beverage. Yet it is as inexpensive as anything of its kind you can buy. Thirty cups to every pound.

You're SURE of the quality if you insist upon getting GHIRARDELLI'S

D. GHIRARDELLI CO.
San Francisco Since 1852

A sample can, mailed free, will prove why it is so popular.

WINDOWS 80c EACH

8x10 8-lt. windows, glazed ..... $ .80
2 ft. 4 in. x 4 ft. 6 in. windows, 2 lt. glazed $1.40
2 ft. 8 in. x 6 ft. 8 in.—1⅜ in. 5-panel Oregon Pine Doors $1.50
Sash Door, 2 ft. 6 in. x 6 ft. 6 in., 1⅜ Oregon Pine, like cut, glazed $2.65
Window Glass, 8x10 ..... $ .05
Window Glass, 24x28 ..... $ .40
Roofing, best 2-ply composition, per sq $1.50

We Manufacture and Sell Only New Goods.

No wreckage or odds and ends. Our motto is "From Forest to Home." Our 114-page catalogue lists everything **at Bargain Prices** you need in building, including Sash, Doors, Glass, Paints, Varnishes, Hardware, Building Paper and Roofing. Let us send it to you now before you build. Address

Contractors and Builders' Supply Co., Inc., Oakland, Cal.
Corner Fifth and Cypress Sts.

ıay commented confidentially to Alison. "Still, there's something in what e says. Shall we—ah—begin to notiate?"

"I think you may as well," she greed coldly.

"Very well, then. The case is simle enough. I'm here to offer to seure the return of the Cadogan colar for an appropriate reward."

"Ten thousand dollars has been oered," she began.

"Not half enough, my dear lady," he nterposed. "You insult the necklace y naming such a meagre sum—to say ıothing of undervaluing my intelligence."

"So that's it!" she said reflectively.

"That is it, precisely. I am in communication with the person who stole our necklace; she's willing to return t for a reward of reasonable size."

"She? You mean Miss Searle?"

The man made a deprecating gesure. "Please don't ask me to name he lady. . . ."

"I knew it!" Alison cried triumhantly.

"You puppy!" Staff exclaimed. 'Haven't you the common manhood o shoulder the responsibility for your rimes yourself?"

"Tush," said the man gently—"tush! Not a pretty way to talk at all—calling names! I'm surprised. Besides, ought to know better than you, acting as I do as agent for the lady in uestion."

"That's a flat lie," said Staff. "If ou repeat it—I warn you—I'll jump ou as sure's my name's Staff, pistol or no pistol!"

"Aren't you rather excited in your lefence of this woman?" Alison turned on him with a curling lip.

"I've a right to my emotions," he retorted—"to betray them as I see it."

"And I," Ismay put it, "to my freedom of speech—"

"Not in my rooms," Staff interrupted hotly. "I've warned you. Drop this nonsense about Miss Searle if you want to stop here another minute without a fight. Drop it! Say what you want to say to Miss Landis—and get out!"

He was thoroughly enraged, and his manner of expressing himself seemed to convince the thief. With a slight shrug of his shoulders he again addressed himself directly to Alison.

"In the matter of the reward," he said, "we're of the opinion that you've offered too little by half. Twenty thousand at the least—"

"You forget I have the duty to pay."

"My dear lady, if you had not been anxious to evade payment of the duty you would be enjoying the ownership of your necklace to-day."

As he spoke the telephone-bell rang. Staff turned away to his desk, Ismay's voice pursuing him with the caution.

"Don't forget about that open drawer—keep your hands away from it."

"Oh, be quiet," returned Staff contemptuously. Standing with his back to them, he took up the instrument and lifted off the receiver.

"Hello?" he said irritably.

He was glad his face was not visible to his guests; he could restrain a start of surprise, but was afraid his expression would have betrayed him when he recognised the voice at the other end of the line as Iff's.

"Don't repeat my name," it said quickly in a tone low but clear. "That is Iff. Ismay still there?"

"Yes," said Staff instantly: "it's I, Harry. How are you?"

"Get rid of him as quick's you can," Iff continued, "and join me here at the Park Avenue. I dodged down the fire-escape and caught his motor-car; his chauffeur thinks I'm him. I'll wait in the street—Thirty-third Street side, with the car. Now talk."

"All right," said Staff heartily; "glad to. I'll be there."

"Chauffeur knows where Nelly is, I think; but he's too big for me to handle alone, in case my foot slips and he gets suspicious. That's why I need you. Bring your gun."

"Right," Staff agreed promptly. "The club in half an hour. Yes, I'll come. Good-bye."

He turned back toward Ismay and Alison, his doubts resolved, all his vague misgivings as to this case of double identity settled finally and forever.

"Alison," he said, breaking in roughly upon something Ismay was saying to the girl, "you've a cab waiting outside, haven't you?"

Alison stared in surprise. "Yes," she said in a tone of wonder.

Staff paused beside the divan, one hand resting upon the topmost of a little heap of silken cushions. "Mind if I borrow it?" he asked, ignoring the mind.

"No, but—"

"It's business—important," said Staff. "I'll have to leave you here at once. Only"—he watched Ismay closely out of the corners of his eyes—"if I were you I wouldn't waste any more time on this fellow. He's bluffing—can't carry out anything he promises."

Ismay turned toward him, expostulant.

"What d'you mean by that?" he demanded.

"Miss Searle has escaped," said Staff deliberately.

"No!" cried Ismay, startled and thrown off his guard by the fear it might be so. "Impossible!"

"Think so?" As he spoke Staff dexterously snatched up the uppermost pillow and with a twist of his hand sent it whirling into the thief's face.

It took him utterly unawares. His arms flew up too late to ward it off, and he staggered back a pace.

"Lots of impossible things keep happening all the time," chuckled Staff as he closed in.

There was hardly a struggle. Staff's left arm clipped the man about the waist at the same time that his right hand deftly abstracted the pistol from its convenient pocket. Then, dropping the weapon into his own pocket, he transferred his hold to Ismay's collar and spun him round with a snap that fairly jarred his teeth.

"There, confound you!" he said, exploring his pockets for other lethal weapons and finding nothing but three loaded clips ready to be inserted in the hollow butt of the pistol already confiscated. "Now what'm I going to do with you, you blame' little pest?"

The question was more to himself than to Ismay, but the latter, recovering with astonishing quickness, answered Staff by suddenly squirming out of his coat and leaving it in his assailant's hands as he ducked to the door and flung himself out.

Staff broke into a laugh as the patter of the little man's feet was heard on the stairs.

"Resourceful beggar," he commented, going to the window and rolling up the coat as he went. He reached it just in time to see the thief dodge out.

The coat, opening as it descended, fell like a blanket round Ismay's head. He stumbled, tripped and fell headlong down the steps, sprawling and cursing.

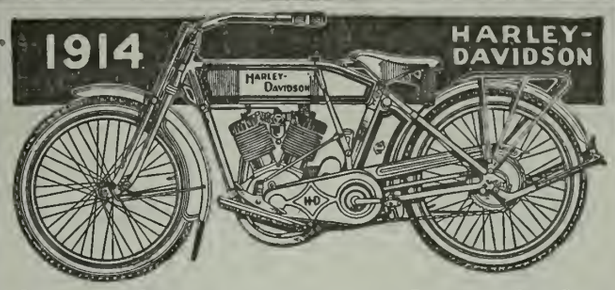
"Thought you might need it," Staff apologised as the man picked himself up and darted away.

He turned to confront an infuriated edition of Alison.

"Why did you do that?" she demanded with a stamp of her foot. "What right had you to interfere? I was beating him down; in another minute we'd have come to terms—"

"Oh, don't be silly, my dear," said Staff, taking his revolver from the desk-drawer and placing it in the hip-pocket of tradition. "To begin with, I don't mind telling you I don't give much of a whoop whether you ever get that necklace back or not." He grabbed his hat and started for the door. "What I'm interested in is the rescue of Miss Searle, if you must

(Continued on Page 36).



Some things you can do with the Harley-Davidson that cannot be done with other Motorcycles

YOU can start the motor on all chain driven models at will, without even dismounting or putting the machine up onto the stand. A simple downward push on either pedal operates the Step-Starter and the motor begins to throb. (*The Step-Starter is a patented feature found only on the Harley-Davidson*).

Double Clutch Control

You can operate the clutch either with clutch pedal or by a hand lever. No need to let go of the grips that control the throttle and the spark or to take either hand off the handle-bars. Just a pressure of the toe or the heel and you engage or disengage the clutch.

Double Brake Control

You can operate the brake by back pedaling on either pedal or by a lever convenient to the foot. This foot control of both clutch and brake gives you practically automobile control of the machine, a distinctly new and very desirable exclusive feature.

Ful-Floteing Seat

You can ride over really rough roads in perfect comfort because the Harley-Davidson Ful-Floteing Seat (a patented feature) absorbs all the jolts, jars and vibrations.

Folding Foot Boards

When on tours and long rides you have a variety of positions at your command. The foot boards are long and accomodate a rider of any height. The pedals can also be used as foot rests if desired.

There are five models of the new Harley-Davidson ranging in price from $200 to $285. Catalog describing the models will be forwarded together with the name of the nearest dealer on request.

Harley-Davidson Motor Co., 913 A St., Milwaukee, Wis.

Producers of High-Grade Motorcycles for More Than Twelve Years

Record Wanted

ORCHARD AND FARM has been delegated to find the record egg laid in California or elsewhere in 1914, or at any time. Each spring most local country papers, and lots of city papers also, publish accounts of some wonderful egg laid by the hen of some subscriber, but no accurate comparison of egg sizes has, to our knowledge, been kept. We will start with an egg that other hens will have to go some to beat.

It was laid a short time ago by a Black Minorca hen belonging to F. H. Driver, 555 Seventh avenue, Richmond District, San Francisco. She has been noted for the big eggs she laid, but this breaks all her previous performances. It was 3⅞ inches long, 6¼ inches in circumference around the thickest part, and weighed a flat four ounces. The weight would not keep for proof, but the shell has been kept for demonstration.

Better records may have been made and this is only to find them. Ducks, geese and ostriches are ruled out, but any breed of genuine hen can enter and eggs laid this year, last, next or any other time will be given credit. Weight is called for if possible, otherwise no good method of judging can be given between a long, narrow egg and a short, thick one. Send in your big egg record if it beats this out; we will print particulars.

There is too much talk of the biggest egg without knowing how large others are.

Work Your Horses

"IF every farmer and horse owner would make it his invariable rule and practice never to let a horse stand a single day idle in the stable and always to lessen greatly the ordinary work ration during spells of idleness, thousands of deaths would be prevented each year and a host of horse ailments wholly prevented," says A. S. Alexander of the University of Wisconsin's College of Agriculture. Poison, he declares, is established in the system of a horse the moment the animal is deprived of its usual work or exercise and continues to receive its ordinary ration.

"While at work or adequately exercised, the horse uses up the nutriments of its feed in the repair of waste tissues, the generation of energy, work of organs and maintenance of body weight. All the excretory organs are active and waste matters are thrown off without difficulty. When this order is reversed and the excretory organs become overtaxed, poisons form and prove injurious. These may be stored up and become actively injurious when the horse is again set at work or they may at once enter into the blood circuit and prove immediately but less violently detrimental.

Farmers everywhere can raise their horses for half what they have to pay on the markets, with added freight, and they will raise better farm horses than they can afford to buy.

Fruit Varieties for Different Sections

(Continued from Page One.)

fornia that new plantings cannot be numerous, though as much planting is being done as there is room for.

Of the non-deciduous fruits olives are particularly mentioned from many quarters from Shasta to Imperial and San Diego. Nearly all along the foothills of our great central valley and on the floor of the valley, where frost conditions are right, much olive acreage is going in. Mission is the big leader. Olives to-day are attracting more attention in proportion to previous standing than any other fruit, with the possible exception of walnuts. The advance of both in the last year or so has been spectacular.

The increase of citrus plantings has been wonderful in central and northern counties. Tehama, which has had little but dooryard trees, reports prospects of considerable commercial plantings, while in other counties farther south, where oranges have a commercial standing, the increased planting continues to increase.

An interesting statement comes from Horticultural Commissioner Frank Swett of Contra Costa on citrus fruits. "None are commercially grown as yet, although dooryard trees do well and bear good crops of good quality fruit. Some day a considerable portion of the home supply of oranges and lemons may be grown in our own county." In other words, the bay counties bid fair to join the valley counties and the south in citrus production.

Much lemon planting is being done in southern California, especially in the coast counties, and a substantial increase in the orange acreage will be made—Valencias mainly close to the coast, where ocean influences are strongest, and Washington navels inland. The favorable aspects of citrus production are causing great plantings to be planned both north and south.

Raisin grapes are going ahead in the Fresno district again, and the seedless varieties are getting well up into the valley also, Thompsons being well in the lead, then Sultanas. Muscats, the standard raisin variety, is rapidly regaining the ground lost in the raisin district during the years when prices were low and markets bad.

Merced county is planting considerable Malagas as well as Thompsons, but as a rule heavy plantings of any table grapes are not being made throughout the State. Emperors are an exception, for there is an extremely heavy demand for Emperor stock toward the foothills of the southern San Joaquin valley. Smyrna figs are also being planted quite a bit in the San Joaquin valley.

Space does not permit to quote individual reports. Imperial county, however, is undergoing such remarkable development in horticulture that it demands attention from fruit growers throughout California. The early ripening, which gives a clean field for the earliest markets, makes every fruit popular that will thrive, and as a result nearly all of our leading fruits are represented there, though often by varieties unknown elsewhere in the State.

Horticultural Commissioner F. W. Waite writes: "At the present time the apricot is one of the leading commercial fruits. The best varieties are Newcastle, Blenheim and Royal, which do well. Smyrna figs are also being planted in large numbers and are fine, having early and long season. All varieties of figs do well.

"Grapes are one of the leaders and ripen very early. Persian No. 21 is the earliest, ripening the last of May. Persian No. 21, Malaga and Thompson seedless are the leading varieties and are good shippers when shipped ripe.

"Dates are one of the future fruits that will be important for this valley, being especially adapted to our climatic conditions. Deglet Noor is the best kind. Many are being planted.

"Grape fruit does well, is of very fine quality and also is ripe very early. Considerable planting has been made in oranges and lemons in different sections, mostly as an experiment, the final results not being positive at this time.

"Olives have done finely, the tree growing rapidly and being clean of insects. Mission is the best bearer.

"Several kinds of peaches have been planted and among the standard varieties many have not been considered a success. Yellow St. John, Stump of the World, Bidwell Improved and Waldo are promising varieties for this section of the State.

"Dates, grapes, grape fruit, figs, apricots and olives will be the leaders in Imperial county. Quite a large planting of Bartlett pears has also been made."

A brief and rough summary of our leading fruits would be about as follows:

Prune planting is extensive, particularly in parts of our great central valley, as well as in bay and coast counties. Peach planting is not extensive, though quite a good deal of planting is being done in different places where attention to the fitness of varieties is considered. Apples are being planted moderately in various places, mostly in mountainous districts. Apricots are going in where suitable soil and climate are found. Bartlett pears are very popular where locations are satisfactory. Almonds are being planted well where frosts are light and summers hot. Walnuts are in heavy demand, not only in the south but from many quarters of the State. Olives are also very popular where frosts are moderate and summers hot. Lemons are planted where the right place can be found. Orange planting is going ahead in the south and is going ahead very rapidly in the north in favorable thermal locations. Raisin grapes have become very popular with the success of the Associated Raisin Company. Wine and table grapes, save of some varieties, are making progress slowly.

With every fruit and every location all the study that can be given as to the adaptation of one to the other is well worth while. The above should be some help as a guide.

The Bandbox

(Continued from Page Thirty-five.)

know; and that's going to happen before long, or I miss my guess." He paused at the open door. "If we get her, we get the necklace, of course—and the Lord knows you'll be welcome to that. Would you mind turning out the lights before you go?"

"Staff!"

Her tone was so peremptory that he hesitated an unwelcome moment longer.

"Well?" he asked civilly, wondering what on earth she had found to fly into such a beastly rage about.

"You know what this means?"

"You tell me," he smiled.

"It means the break; I won't play A Single Woman!" she snapped.

"That's the best guess you've made yet," he laughed. "You win. Good night and—good-bye."

(To Be Continued).

Copyright, 1912 by Little, Brown & Co., Boston, Mass.

LIVESTOCK

Have You Livestock You Want to Sell?

BREEDERS —AND— OWNERS

Do You Want to Buy Livestock?

ORCHARD AND FARM keeps in close touch with the breeders of pure-bred stock on the Pacific Coast, and it offers you co-operation in your efforts to

Build Up Your Herd

or to dispose of your surplus stock.

Livestock is the life of the farm. Orchard and Farm gives you valuable hints in every issue on its care and management. Our new livestock folder will be sent free on request. It contains something every farmer and breeder should know.

Address Livestock Department

ORCHARD AND FARM

Hearst Building **San Francisco**

Louisa M. Alcott's Famous Book

"Little Women"

Now published in a new PLAYERS' EDITION containing 12 illustrations from scenes in the play. Read the book and see the play.

Over One Million Copies of "Little Women" Have Already Been Sold

and this wholesome story of New England family life was never so popular as it is to-day.

Already enshrined among the most delightful of youthful memories, "Little Women" will, in its newest form, make a wider and deeper appeal than ever.—Boston Globe.

Bound in Cloth. 617 pages.

Price, $1.50 net; by mail, $1.67

At All Booksellers or the Publishers

Little, Brown & Co., 34 Beacon St., Boston

Among the Scenic Wonders of America

THOSE OF THE

Rocky and Sierra Mountains

STAND FORTH PRE-EMINENT

Marvelous Scenic Attractions seen from the car window without extra expense for side trips:

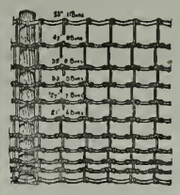
Pikes Peak
Royal Gorge
Grand Canyon of the Arkansas
Collegiate Peaks
Mount Massive
Tennessee Pass
Eagle River Canyon
Canyon of the Grand River
Glenwood Springs
Castle Gate
Salt Lake City
Great Salt Lake
Glistening Beds of Salt
Mirage Land
Pilot Mountain
Grand Canyon of the Feather River

WESTERN PACIFIC
DENVER & RIO GRANDE

Illustrated booklets, descriptive of "The Scenic Route to the East," free on request.

E. L. LOMAX
Asst. Pass. Traffic Manager
San Francisco, Cal

FRANK A. WADLEIGH
Passenger Traffic Manager
Denver, Colo.



KOKOMO STEEL WIRE FENCE

Either square of diamond mesh, FOR POULTRY, HOG OR STOCK USE. Many styles to select from. Satisfaction guaranteed. Send for Catalogue with net factory prices.

California Anchor Fence Co.

Market and Aurora Streets - - - - - Stockton, Cal.

California

¶ Is a land of valleys and the advantages it offers to the farmer are dependable.

¶ Water for irrigation comes from mountain streams and a vast underflow.

¶ The climatic conditions insure larger returns per acre than is possible in less favored localities.

¶ There is also the benefit of a great variety of products.

¶ The movement of population into California is rapidly increasing.

Write to any of our agents for Map, Folders and Illustrated Literature.

Southern Pacific

On the Firing Line

in every walk of life you'll find good old "Bull" Durham. Men of action, men with red blood in their veins, who do the world's work, and do it well, learn to appreciate things at their *real worth.* They are not fooled by frills—they demand *honest value.*

These are the millions of men all over the earth who find complete, healthful enjoyment and lasting satisfaction in "Bull" Durham hand-made cigarettes!

GENUINE
"BULL" DURHAM
SMOKING TOBACCO

(Enough for forty hand-made cigarettes in each 5-cent sack)

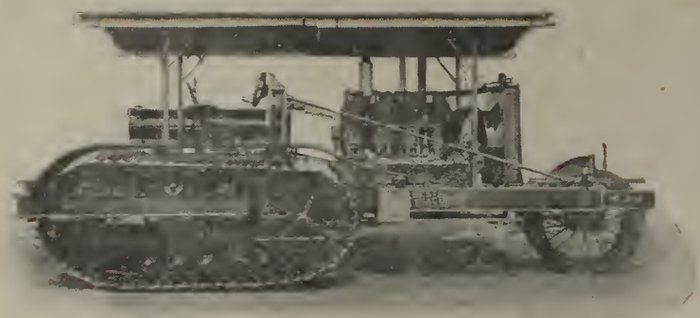
There is a fresh, peculiar fragrance—produced by a secret process—recognized the instant you smell the smoke—which gives a special pleasure to "Bull" Durham in a handmade cigarette.

Note that unique aroma! It gives a greater relish and savor to your cigarette. "Roll your own" and learn this *distinctive form* of tobacco enjoyment.

FREE An Illustrated Booklet, showing how to "Roll Your Own," and a Book of cigarette papers, will both be mailed, *free,* to any address in U. S. on postal request. Address "Bull" Durham, Durham, N. C., Room 0000.

THE AMERICAN TOBACCO COMPANY

"Orchard and Farm" urges immediate notification of this office if there is any dissatisfaction over the purchase of goods from advertisers whose announcements appear in this publication.



The Highest Traction Power Yet Developed

THE

C.L.B. 70 H. P. "Track Layer"

"The first farmer was the first man, and all historic nobility rests on possession and use of land." The story of the development of agricultural implements is the story of the development of man. In no other industry have such remarkable achievements been attained. Man's ingenuity has had fuller play in the development of farming implements than in any other field. Those who have devoted their efforts towards the improvement of agricultural implements have earned for themselves the eternal blessing of posterity.

Well in the forefront of those who have played a prominent part in the evolution of farming implements is the Best family of California. For nearly 50 years this noted family has been eugaged in the mauufacture of farm power machinery.

FROM THE MARYSVILLE APPEAL, FEBRUARY 6, 1889—25 YEARS AGO:

"New Steam Plow—Daniel Best, the well-known inventor, has invented a steam plow and has gone north to introduce it to Butte and Tehama counties, and on his return will call here with a view of conferring with our farmers and his old neighbors concerning his invention. We did not see him as he passed north from San Leandro, but understand that he intends to have one of his plows tried in this county. The model before us is a traction engine and something like a common plow, no horses being attached to it in any way."

The present head of this well-known family and the president of the C. L. Best Gas Traction Co. is Mr. C. L. Best. From his early boyhood this man has been reared in an atmosphere of farm power equipment. His entire life has been devoted to the study and betterment of agricultural implements and his efforts in this line have placed him well in the forefront of the country's most noted and successful designers. His latest and best production is the famous C. L. B. 70 H. P. Track Layer.

The C. L. B. 70 H. P. Track Layer will plow, harrow, seed, harvest, ditch two-thirds cheaper than it is possible to do with mules or any animal power, and will make continuous turns, loaded, as short as any track engine on the market.

Both tracks on a C. L. B. 70 H. P. Track Layer are pulling the same, whether going straight ahead or making a turn. No other tractor of this type does this.

The C. L. B. 70 H. P. Track Layer eliminates the twists and strains common to the type which only pulls with one track on the turn.

The 8-inch face internal gear drive on a C. L. B. Track Layer, with its 8-inch face driving pinion, does the same work as second motion chain drives. Hence the C. L. B. 70 H. P. Track Layer has only two moving parts in its internal gear, against approximately 40 moving parts in other track laying machines.

In the Farm Power Demonstration to be held in Marysville March 5, 6 and 7, this famous track layer can be seen in full operation.

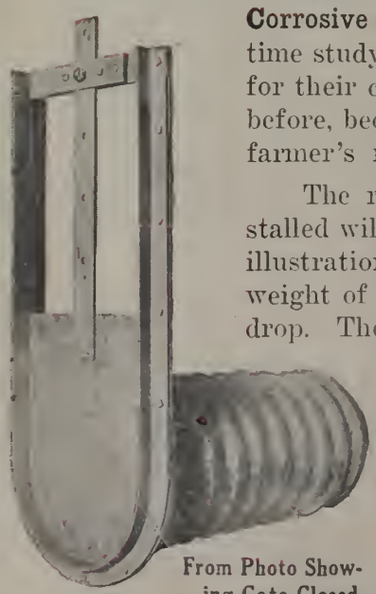
Won the Gold Medal California State Fair at Sacramento, 1913. *Won the Gold Medal California Land Show, San Francisco,* 1913.

SEND FOR CATALOGUE

C. L. Best Gas Traction Co., 105th Ave., Oakland, California

Long Life, Strength, Ability to Stand the Hardest Service and Simplicity to Insure It Will Always Work Are the Chief Arguments for the Use of This

IMPROVED IRRIGATION GATE



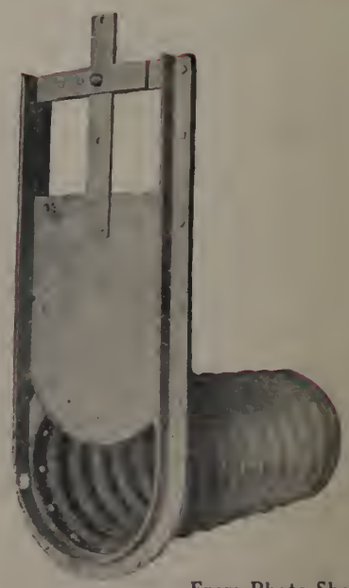
From Photo Showing Gate Closed

Made of **Genuine Open Hearth Iron**, this gate is **Non-Corrosive** and **Rust-Resisting**. Its design is the result of a long time study of the use of farm irrigation gates and of materials for their construction. It is a better gate than was ever made before, because we have combined in it exact knowledge of the farmer's needs with exact knowledge of the best material.

The result is a gate that will endure, and wherever installed will be a **permanent improvement** on the property. The illustrations herewith show its construction. Note the good weight of frame, of bolted angle iron, also the easily adjusted drop. The steel collar feature absolutely prevents leakage or breaking by strain.

We manufacture these gates in sizes from 8 inches to 24 inches diameter. Sizes, prices, etc., furnished immediately on application. Address nearest office.

Standard Corrugated Pipe Company



From Photo Showing Gate Open

516 Rialto Bldg.
San Francisco

737 Lawrence St.
Los Angeles

CALIFORNIA STATE LIBRARY

ORCHARD and FARM

HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888
IRRIGATION

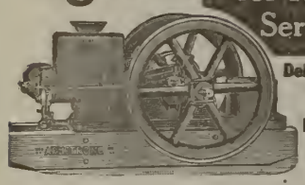
STOCKRAISING
POULTRY AND
COUNTRY LIFE

ol. XXVI--No. 4 Published by County Life Publishing Co. April, 1914 Hearst Building, San Francisco, Cal. $1.00 a Year

One of the Canals That Turned a Desert Into an "Imperial" Valley

Armstrong
1½ to 20 H. P.
Engines

An Engine Built for Hard Service



Delivers 100 Cents in SERVICE For Every Dollar Invested

IF you want an engine that is built for exacting, dependable service—that is economical in first cost and cost of running—one that runs so *true* and *smooth* and *steady* and QUIET that you can just *forget* her—HERE'S YOUR ENGINE.

Built For Old Customers First

Armstrong Gas Engines right up from the raw material are built complete in our own factory. They are shipped all over the world to our regular customers—to men needing a dependable trouble-proof engine to operate Armstrong **Well-Drilling Machinery.** Naturally these men get absolutely the best that lies in our power to devise. And we've been in the business for over 45 years. Today men say no engines excel the Armstrong in durability and simplicity of construction.

Magneto Free

We don't tell you ours is the only good gas engine. But with its wonderful built-in gear driven magneto—furnished with all engines over 1½ H. P.—with other striking advantages—with the same standards of quality adhered to that have put the name Armstrong to the very front—we DO claim that it is close to perfection. After comparative tests side by side with other engines, they have seemed to put the Armstrong Engine IN A CLASS BY ITSELF.

Let Us Send You Full Facts—Owners of Armstrong Engines get real protection. The written guarantee going with each engine is the strongest indication of unequalled quality ever submitted by a manufacturer.

If you need an engine, you should at once write us. Just say "Send Armstrong Facts." Do it today.

1 1-2 to 20 Horsepower | Stationary and Portable

Armstrong Manufacturing Co.
403 San Pedro St. Los Angeles, Cal.
Home Office & Factory, Waterloo, Iowa; Estab. 1867
Norman B. Miller, Distributor
503 Market Street San Francisco, Cal.

Shaw Bunch Rakes

Made especially for heavy work that no other rakes are fit for. Primarily made to bunch hay out of wind-rows, also to do any heavy work such as raking cornstalks, sage brush, etc.

High wheels, rigid teeth, strong, rigid frame.

Descriptive Literature on Request

THE H. C. SHAW COMPANY
Manufacturers
52 N. CALIFORNIA ST.
Stockton, California

QUALITY
BERKSHIRES

OUR BERKSHIRES ARE NOW BETTER THAN EVER

They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.

Send for Catalog.

Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

When answering advertisements, please mention "Orchard and Farm."

CONTENTS FOR APRIL, 1914

Page

AGRICULTURAL WONDERS OF THE IMPERIAL VALLEY 1
A description of the leading agricultural features of this great valley, emphasizing the facts most important to farmer and homeseeker, but overlooked in ordinary descriptions.

WAYS OF IMPROVING IRRIGATION METHODS 3
Professor B. A. Etcheverry shows methods by which irrigation water can be made more valuable in California.

PROFITABLE DAIRYING IN THE IMPERIAL VALLEY 4
Outline of methods of a leading dairy, interesting and instructive to dairymen and others.

PERMANENCY OF VALUE IN AMERICAN BEEF 5
M. E. Aldridge analyzes the outlook for beef, telling also of conditions in Shasta county.

TRACTOR DEMONSTRATION AT WEST SACRAMENTO 6
Announcement of Orchard and Farm tractor demonstration in May.

POSSIBLE LESSONS FROM TRACTOR DEMONSTRATIONS 7
Showing many definite points of tractor value worthy of investigation.

ADVANTAGES FOR CALIFORNIA HOGS 8
Definite comparison in dollars and cents of cost of California hogs and of hogs imported from East when freight and other expenses are considered.

THE CUSTOMER SEEKS THE MARKET. 9
How stock breeders will come to California to buy through the Exposition.

THE SOUND HORSE 9
W. M. Carruthers describes indications of unsoundness.

SHEEP RAISING PROFITABLE 10
Methods of making a success in sheep raising.

SALT FOR LIVESTOCK 11
Definite illustrations showing how California stock do best with plenty salt.

SUMMER PASTURES AND FEED 12
I. D. Graham outlines methods of securing good summer feed.

EDITORIAL 13
Programme for the Livestock Association, or what California Livestock needs.

PROBLEMS OF THE FARMER 14
Answers to many questions asked by our readers.

A STANDARD OF ORANGE EXCELLENCE 15
Discussion of causes for the production of high quality oranges.

WAYS OF FIGHTING GOPHERS 16
Ernest A. Marris describes successful methods of fighting gophers on his ranch.

THE CITY YOUTH AND THE FARM 20
Advice to inquirer who expects to study agriculture and go into farming.

HOW TO START AN ORANGE GROVE 23
Suggestions to a merchant who wishes to know how he may best select an orange grove and learn how to farm it.

THE STORY OF THE ANCONA 27
A story of this excellent breed of fowls.

MANY SMALLER ARTICLES ON NUMEROUS SUBJECTS, Fruit, Stock, Poultry and General.

HOUSEHOLD DEPARTMENT

IN THIS AGE OF SANITY AND SANITATION 28
An article on practical household sanitation by a farmer's wife.

THE HOUSEHOLD EXCHANGE 29
Prizes offered for best suggestions for the home; kitchen suggestions this month.

USEFUL AND UP-TO-DATE PATTERNS 30
The latest things to wear

SILK WORMS FOR CALIFORNIA
Telling how the University of California is introducing silk culture into California homes.

HINTS FOR HOUSE CLEANING TIMES
Valuable suggestions by housekeepers on house cleaning.

THE BAND BOX
The fascinating mystery story by Louis Joseph Vance.

Send Only $1.00 for this Comfortable Rocker

Price $12.50
Freight Prepaid

One Dollar Down
50c a Week, or $2 a Month,
Whichever You Prefer.

This rocker is large and roomy, of beautiful material and design, and the best of workmanship. It would cost $15.00 anywhere else, and you can't buy a more comfortable rocker at any price.

Our furniture lasts a lifetime. We guarantee satisfaction. Examine this rocker, if not satisfied return it at our expense and your money will be returned to you without question.

Slip $1.00 in an envelope to-day, mail it to us, stating whether you wish to pay the balance in weekly or monthly installments, and we will ship the chair, freight prepaid, the day we receive your order.

Many other styles at all prices. All kinds of wicker furniture. Send for free catalog. We have fine proposition for agents. Ask us.

Pacific Coast Rattan Co., Inc.,
16th and Jefferson Sts.
Oakland, Cal.

Method of Squirrel and Gopher Extermination Approved By Government.

With all the different methods of killing squirrels and gophers, it is hard for any individual to choose the best method the first time. The Government has been experimenting for a number of years with squirrel and gopher exterminators and finally discovered a method which is apparently entirely satisfactory. This means a great deal when it is realized Government statistics show that squirrels and gophers did five million dollars damage in California alone last year.

By means of a machine, called a squirrel exterminator, a preparation called Kilmoi is transformed into a gas, which is forced into the burrow by the machine. The gas is heavier than air, settles in the bottom of the burrow, and the animal is asphyxiated. It sounds simple and is simple, because a man can treat each burrow in a minute, and the record of the Government shows 98 to 100 dead squirrels or gophers out of every hundred.

The method is inexpensive and the Kilmoi for each burrow costs about one cent. The squirrel exterminator costs $9.75 and Kilmoi is sold in one-gallon tins at $1.50; five-gallon tins at $6.00, with reduced prices for larger quantities. Additional information may be obtained by addressing Herbert F. Dugan, Dept. K, 1170 Sutter St., San Francisco.

When answering advertisements, please mention "Orchard and Farm."

ORCHARD AND FARM

IRRIGATION

Vol. XXVI APRIL, 1914 No. 4

Agricultural Wonders in the Imperial Valley

By D. J. Whitney, Editor

IMPERIAL VALLEY, in the southeastern corner of California, has leaped into fame all of a sudden through its spectacular change from a desolate, uninhabited desert to one of the greatest irrigated areas in America and one of the most wonderful in its nature and history. A repetition of usual statements about the valley would show nothing new to most persons, so what is here is mostly an agricultural talk for people who want to know how farming is done and to learn from others' experience.

In starting, it is well to say that although in 1900 the valley was dry, bare, uninhabited, hot beyond belief, and a desert in real fact, today there are more acres under irrigation than in all the rest of Southern California, the land is unrivaled in productivity, and the valley is covered as far as the water is gone with as beautiful and prosperous farms as our country can provide. The country looks new, yet substantial and permanent.

Even so, conditions are so unique that the future of some of the most promising crops is merely guess work and the right methods of culture not well determined.

It is known that soil and climate give remarkable yields. It is certain also that the earliness of the valley in many crops is one of the greatest features of it. The soil is interesting, irrigating methods and problems are very interesting, and the climate the greatest feature of all.

Hot and Dry.

The climate was responsible for making the valley one of the most barren deserts of the globe and it is responsible for its unique values today. It gets hotter a few places on the earth, but not many, also drier. The muddy water of the Colorado keeps the ground as moist as desired and affects the air slightly in humidity and temperature, but even so the mercury soars far above the 100 mark in summer and the dry atmosphere at the same time makes the heat bearable. Here the first week in March, when spring is just beginning, it is 90 degrees at mid day and will get warmer, till by July the mercury may mount to 115 and 120 in the shade.

Related to these high temperatures is the extreme dryness of the atmosphere, which makes the heat far less oppressive than the mercury would suggest. In spite of universal irrigation and rapid evaporation the summer air is close to absolute dryness. Normal humidity is figured usually at about 65, in hot summer days 8 and 10 is common, and it has been as low as 6. In fact, twirling a moistened thermometer will nearly always cause the mercury to fall to about 70 and may show, according to rule, no moisture at all, which condition never exists.

What one sees in all parts of the Imperial Valley.

Summer's heat and mild winter temperatures are accompanied by next to no rainfall. A year may go by with no rain and, again, when rain does come it may come in torrents. Enough rain to hurt things so rarely falls that it is totally disregarded in housing animals or crops. In desert conditions rain seldom in history was sufficient to affect vegetation other than the occasional clump of greasewood or mesquite.

Rich Clay Soil.

It goes without saying that such unique climatic conditions make unique growing conditions, but to this is added one of the most interesting areas of soil in America. California arid soils are largely sandy. Imperial valley soil almost invariably (though there are rare exceptions) is one of the heaviest soils that exists and yet is a real soil, productive and tillable. Its richness in lime and in all mineral plant foods, all very available to plants, makes it different from adobe or real clays. Furthermore, it has in its native state next to no vegetable matter in its composition, for no vegetation to amount to anything grows thereon and the hot sunshine has baked it for centuries.

Floods from the mountains or skies above have passed over the floor of the valley, flowing rapidly downward to the Salton sea, more than 200 feet below sea level, washing out innumerable small water courses, whose walls stand unchanged for months running, and little of this water could sink in, as it would with sand. As a result the unreclaimed desert is composed of chocolate colored, sunbaked clay, with here and there a desert shrub 18 inches high or so, and rarely a mesquite tree, nothing in most places. But when that soil does get water and tillage, it does make things hum. It fairly recalls Jack of the Beanstalk days.

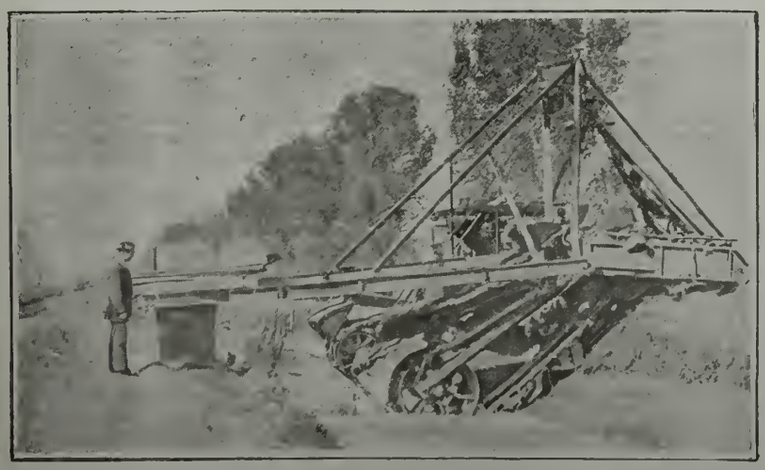
Roads down there as a result of soil, climate and irrigation supplies are a wonder. They are wide and divided into halves by a small ridge down the middle. When one side starts to get dusty, they simply smooth it off, turn on a lot of ditch water and let it stand to soak in. Meanwhile, travel goes on the other side.

When the water dries, and the soil packs hard travel begins on it and it gives a hard, smooth surface, no mud, no dust, and the other half may be irrigated if it needs it. In summer the roads are thus irrigated about every three weeks, no sprinkling carts ever being used. It is cheap business and wonderfully effective. Every visitor "sits up and takes notice."

Alfalfa Wears Crown.

Coming back directly to agriculture, alfalfa is the one great crop. Everywhere the eye goes it meets green alfalfa fields and other things seem only side issues, and alfalfa with nearly a year-long season, the richest kind of soil and abundant moisture, grows in glory. Nearly all farming is based largely on alfalfa growing and without a possibility of contradiction, alfalfa should precede, follow, or accompany every crop grown for the best results. The fact that bare ground with only milo maize or dead cotton stalks can be seen in spring, is largely a result of poor farming or inability to handle too large an acreage. The land is worth too much for that sort of thing.

Alfalfa opens up the soil for many feet down, fills it with humus and nitrogen and makes it rich in every way, easier far to work than at first and much better to take water. The experienced farmers claim that three years after planting irrigation water will sink in far better than the first year, and that the roots open channels for the water deep into the soil. Alfalfa is valuable enough for itself and there is not a crop but what will be more productive after it than without it. There is so much land that it is far better to plant fruit,



Dredger at work cleaning canal.

cotton or what not on alfalfa land than raw land, except, perhaps, for first crop or so.

Alfalfa and Livestock.

You may hear enough about dates, cantaloupes or what not, but they are minor features. Alfalfa means livestock and the valley is pre-eminently an alfalfa and livestock county. Cattle are everywhere. Although only about a decade old, the county has jumped ahead to be the second greatest butter producing county of California and at the pace it is going will soon be first.

More than that, beef production stands at the side of dairying, and of about equal importance, 1,300 carloads of beef cattle being shipped from the valley in one year, of only slightly less value than the butter manufactured. For a time Imperial was likewise the greatest swine producing section of California, though the industry is falling off, and shipped last year 540 cars of hogs, while sheep amounted to 342 cars, so altogether the importance of livestock other than dairying is seen at once.

Irrigation Is Different.

No other part of California is so well supplied with water as the Imperial valley, and as water it is a wonder. Without seeing it no one would believe that water could hold so much mud, or even half as much. Little eddies in the irrigation canals and ditches are shown only by the way that the dirt moves. Sometimes in the year the water is almost said to resemble molasses in thickness, which is an exaggeration, but for sure the water is thick. It has been figured out that the amount of silt deposited in the valley in a year would cover 53 square miles a foot deep, or one square mile 53 feet deep. Such an amount of silt has its disadvantages, but from the standpoint of fertility it is invaluable, as it makes the richest soil possible. Likewise it is lighter than most Imperial valley soil and improves the texture.

Unfortunately a great deal of it is deposited in the canals and dredgers have to go over the canals frequently to clean them out. Already the canals are elevated several feet above the natural level of the country and in a hundred years from now there is no telling where they will be.

One good feature of the situation is that there is a nice and uniform slope to the land toward the center, which enables canals to carry far more water than they otherwise would, while the swift current carries more sediment than would a more level canal.

The whole valley is below sea level and develops the peculiar feature of water running away from the ocean rather than toward it.

The water costs but 50 cents an acre foot and it can be had when requested within three days or less. Ditch water is also the only water, as wells are possible only in certain sections, and the result is that ditch water is used for everything, home use as well as for stock and irrigation. The regular thing is to have settling basins to let the water clear and to pump the water from these with windmills or otherwise into tanks. Where town water works are situated the silt gives somewhat of a problem, and unless the location is moved there will be a good sized hill at the water plant of each town in a half a century or so. On the farm it don't matter. Under all conditions the cheapness and abundance of the water more than makes up for any expense of caring for canals, etc., and the silt is the cheapest and best fertilizer imaginable. The silt on naturally rich soil and the alfalfa adding its richness must make soil robbery here almost an impossibility with any sort of good farming.

Some Special Crops.

The great facts of rich soil, abundant water and high productivity are but a part of the special advantages possessed by this part of California. Leaving the special adaptability of alfalfa to the side, almost every crop grown is so much earlier than similar crops elsewhere, or is so much different for some other reason that the county is in a class by itself, or in the same class with the Coachella valley, adjoining Imperial on the north. As a rule earliness is the feature that puts the profit in nearly everything grown.

Cantaloupes were about the first thing appreciated along this line. Last year 3,419 carloads were shipped to all parts of the country, so early that the Imperial melons take the best prices in every section. They are planted in January if weather permits and had several leaves by March 1, this year. They have been so profitable that nearly the limit of profitable acreage has been reached. Watermelons are also early. Most are small, but of the finest flavor. Less than 500 cars are shipped, owing to freight charges.

Asparagus is another early vegetable on a secure foundation. This is of a radically different type from the white, fleshy Sacramento river asparagus. It is long and green and contains a large proportion of edible flesh, and goes mostly to the Chicago market, which will take only green "grass." Thus it has no competition until Eastern "grass" is ready, and shipments go on from early in February to early in May, or thereabouts. McPherrin & Rood of Imperial received over $280 per acre, f. o. b. station in 1913, and others growers in proportion, according to care in production and shipping. The grass is shipped in small packages, wrapped in waxed paper.

Fruits All Different.

We hear a lot said about fruits, but actually they have at present next to no importance with few exceptions, and nobody knows certainly whether Imperial is to be one of the leading fruit sections of California or not, or what most varieties will do. The subject is so very interesting to all fruit men that a special article may be given to the subject later. There are some big surprises in the valley and several lots of horticultural rules apparently don't hold good.

Grapes are a fruit that has won a place on the Imperial map for certain, as there are about a thousand acres of table varieties that come several weeks earlier than any other California grapes. The growth and early fruiting is a marvel, as is for that matter, the case with most other fruits. Malagas, Muscats and seedless varieties are most grown, and a Persian variety, which is worthless elsewhere in California, but a fine producer, shipper and seller there, and the earliest grape grown to boot.

Apricots have also a good acreage and ripen so soon and bear so well that the fruit men have a fine market. They claim that a fine canning and drying product can be obtained, but shipping takes all produced now. Early shipping peaches are also coming into favor.

Only dooryard olive trees are yet grown, but it is claimed that the trees produce very heavily of very large fruit of fine size. Figs are another fruit with unique features that will be spoken of again, as will certain other fruits.

National date farm near Heber.

Citrus fruits endure the winters well, though they were hurt in January, 1913. Pomeloes seem to outclass oranges and lemons in vigor of tree and quality of fruit. The peculiar condition exists that the quality is excellent, superior, it is generally admitted to other Southern California fruit, although a humid and not a hot dry atmosphere is generally considered necessary for best results.

Oranges are early, like Tulare oranges, or earlier, but F. Heiny of Brawley, who has given the matter special attention believes that the Naveleneia is the only orange whose quality is highly meritorious, and that this variety is preferable to the navel and the Valencia.

Dates Rival Arabia.

There are two great crops in Imperial that have come to stay and be famous which as yet are unknown commercially to nearly all California —dates and cotton. Dates are in nearly every dooryard and on every street, and have proved a striking success, although they are as yet too few to make a big acreage.

The climate rivals that of Arabia for date prosperity, but Arabia is outclassed for irrigation supplies and scientific methods, and the best varieties of the world have been found.

King Cotton Enthroned.

The stranger might consider cotton a hobby in California, but leaving out alfalfa, which is a matter of course, cotton is being given more attention than any crop in the valley. It started commercially only in 1909 and had one bad year through inexperienced growers, but there will be probably 60,000 to 70,000 acres this year. Nowhere in America has better cotton land been found. The cotton land of the South does not touch it. The yield averaged a little less than a bale to the acre in spite of inexperience, late plantings and much poor farming, and reaches often two bales per acre. Naturally, the cotton differs from Southern cotton as the climate differs, and the difference is in California's favor. The harvest season is long, the lint clean and of fine quality, bringing a premium for the common short staple, though long staple cotton, Durango or Egyptian, is worth still more and may take the acreage ultimately. We may have more on this later.

The Simple Life.

A person can no more tell of the climate and crops of Imperial valley in a short space than he can do justice to California, but one can gather from the above that this part of California is adding to the already great reputation of our State.

Life strikes one as being simple and natural there. Business blocks are substantial and fine, but through the absence of real cold weather or rain and dampness the houses need not to be built with little thought of heat, rain or dampness. They are thus often little more than shells, tent cottages and such, especially while the farm is being put on its feet.

The old saying of a farmer building his barn first and house later means nothing here, for you don't see any barns, chicken houses or any such thing. The standard barn is to put up some posts, put on a light frame work and cover with branches and straw for shade for cattle or chickens. Everything else is out of doors and needs no shelter. Crops are left out in the open and are as good there as anywhere. A family can camp while the farm is being established and all labor and capital put into stock and land improvement, not buildings.

Although the country is so new, and as a desert so barren, the rapid growth of trees makes it look old and well established. Cottonwoods line many canals and eucalyptus others, or act as windbreaks and give shade to livestock and wood for the home or town. Everywhere one looks trees in rows or clumps add variety to the landscape.

Although the advance has been rapid, it is more rapid now than ever. There are about 300,000 acres under canals, though not all irrigated, and at least 100,000 acres more will be irrigated in just a short time. Before long there will be half a million acres under irrigation, under present expectations, plus a good acreage in the part of the valley that is in Mexico.

Years ago a Californian who knew irrigation said: "An ideal country would be to have all the moisture fall as snow in the mountains and none in the valley." The ideal in effect is in Imperial, a land of little rain and lots of irrigation water. It has as well a wonderful rich and deep soil, a wonderful climate, almost an all year round growing season, a wonderful history and a fine lot of American citizens establishing happy, prosperous homes. It adds new and striking features to California agriculture.

Ways of Improving Irrigation Methods

THE fact that California owes so much to irrigation shows of itself the necessity for the proper saving and utilization of the water that is brought into the canals. This whole subject of "Increasing the Duty of Water" is thus as important as the matter of developing new irrigation supplies. It is the theme of a circular from the University of California by Professor B. A. Etcheverry, the leading features of which are given here.

The importance of obtaining the highest duty of water is apparent when it is realized that the available water supply, when fully developed, will only serve a very small part of the total area of land adapted to irrigation in the arid and semi-arid region, and that wasteful irrigation has been the main cause of over 10 per cent of the irrigated lands becoming unfit for crop production through water-logging and the accumulation of alkali salts in the surface soil.

It is a significant fact that, while the duty of water is affected by a number of factors, the most important is the value of the water. This is well illustrated by the high duty of water obtained in Southern California or elsewhere where the value of water is high, as compared with the lower duty obtained in localities with a more abundant and cheaper water supply. In the Riverside district, in Southern California, where the average annual rainfall is 10 inches, the gross duty on 9,000 acres of land irrigated by the Riverside Water Company's system averaged for a period of seven years a depth of about 2.3 feet. About a third of this tract was in alfalfa and the remainder mostly in citrus orchards, both of these crops having a greater water requirement than deciduous trees. In Pomona, Southern California, the quantity of water applied by pumping on alfalfa fields averaged 2.3 feet for the season of 1904; the mean annual rainfall is about 20 inches, but the rainfall for the preceding winter was only 9.1 inches; yields of 5 to 9 tons of cured hay per acre were common. From citrus orchards the duty on about 3,000 acres in the Pomona district averaged about 0.8 foot. As compared to these facilities in Southern California, the average gross duty for the arid region, as obtained by the Irrigation Investigations of the U. S. Department of Agriculture, is about 4¾ acre feet per acre for all crops.

Reasons for Losses.

The losses of water which produce a low duty are:

1. The loss which occurs by seepage and evaporation in the conveyance of water in canals.
2. The loss by deep percolation into the soil.
3. The loss of soil moisture by evaporation.
4. The loss of water by surface run-off or waste at the ends of fields or furrows.

The difference between the gross duty and net duty represents the extent of the conveyance losses or the efficiency of the system. Measurements made by the Irrigation Investigations of the U. S. Department of Agriculture and by the U. S. Reclamation Service, show that in a new canal system of unlined earth canals the water delivered to the farms is probably no more than 40 per cent of the water diverted. For old canals in good condition the efficiency may be increased to 65 or 70 per cent.

Concrete lined canal in Western Yolo foothills.

Seepage Surpasses Evaporation.

The conveyance losses are due to evaporation as well as percolation, but, contrary to a common belief, the losses by evaporation from flowing water in a canal are insignificant when compared with those of seepage. The average daily evaporation for the irrigation season will generally not exceed about one-quarter inch per day, which is from 25 to 75 times less than the rates of seepage losses previously given. The greater proportionate conveyance loss of water for small canals than for larger ones shows the economy of water to be gained by adopting the practice of rotation for the operation of the smaller laterals at least and by planning the systems so as to shorten as much as possible the mileage of smaller ditches. The conveyance loss can be further decreased by the proper location of canals, so as not to pass through very porous ground, and by not using too deep a cut where such a cut will reach a porous subsoil.

How Linings Save Water.

In regard to the great saving that can be made by lining canals, Prof. Etcheverry says:

1. A good oil lining, constructed with heavy asphalt road oil, applied on the ditch sides and bed at the rate of about 3 gallons per square yard, will stop 50 to 60 per cent of the seepage.
2. A well constructed clay puddle lining is as efficient as a good oil lining.
3. A thin cement mortar lining about 1 inch thick, made of one part cement to four of sand, will prevent 75 per cent of the seepage.
4. A first-class concrete lining, 3 inches thick, made of one part of cement to two of sand and four of gravel, will stop 95 per cent of the seepage.
5. A wooden lining, when new, is as efficient as a concrete lining, but after two or three years repairs and maintenance will become an important item, and by the end of eight or ten years it will necessitate complete renewal.

Lining Costs.

The cost of an oil lining where oil can be bought at California prices (about 2 cents a gallon) is about ½ cent per square foot. Cement mortar lining 1 inch thick costs about 2 to 4 cents per square foot. Cement concrete 2 inches thick costs from about 4 to 6 cents, and 3 inches thick from about 6 to 8 cents a square foot. These prices do not include the trimming and preparation of the ditch before the lining is put on, which would add from ¾ to 1½ cents per square foot. The cost of a clay lining depends greatly on the nearness of the canal to suitable clay. If clay is close at hand it can be hauled and spread on the canal, then either tramped in by cattle or worked in by dragging chains over it, at a cost of less than 1 cent per square foot, but there are localities where enough money has been spent on clay linings to pay for a good concrete lining. Wooden lining has been used in very few cases, and the cost of such a lining built of 2-inch lumber nailed on sills and side yokes will often be as much as that of a 2-inch concrete lining and not nearly as durable.

The disadvantages of the cheaper linings are the following: An oil lining stops only a part of the seepage losses, and while it will resist erosion well, it probably will not prevent the growth of weeds for more than one season unless a high velocity is used, and it will not stop the activities of burrowing animals. Oil linings have not been sufficiently tested to determine their durability. Clay puddle will not prevent the burrowing of animals and weeds grow rapidly, especially since the velocity of the water must be small in order to prevent the eroding or washing of the lining.

Advantages of Concrete Lining.

A concrete lining has none of the above disadvantages, and it meets the requirements of a good lining better than any other material. The only objection is its higher first cost. But where water is valuable its expense is well justified.

The feasibility of using concrete linings will depend on the extent and value of the water loss and on the necessity for prevention of waterlogging of the land below by the seepage water. Other benefits which must be considered are the decreased cost of maintenance and operation and the greater safety. There are no weeds to contend with, no breaks to mend, and consequently the cost of patrolling is largely eliminated. It must also be remembered that a higher velocity can be given to the water in a concrete lined canal, and a smaller and better form of canal can be used, which, especially on a sidehill, will materially decrease the cost of excavation. But even when only the value of the water loss is considered, it does not require a large loss nor a very high price for water for this annual value to represent the interest and depreciation on a capital sufficient to put in a first-class concrete lining.

Conclusions.

This circular also speaks of the saving that can be made by the farmer himself by the use of short runs, deep furrows, comparatively large heads, proper cultivation and other efficient methods. The conclusions of the whole matter show the vast saving that is possible. It is said:

These losses when assembled indicate that for an average irrigation system the conveyance loss may be fully 40 per cent of the water diverted, and of the amount delivered 25 per cent or more may be lost by deep percolation, 25 per cent may be lost by soil evaporation, and 10 per cent lost by surface run-off; the total of these losses would be 76 per cent of the water diverted.

Where the value of the water will justify it, concrete linings will decrease the conveyance loss to about 5 per cent of the water diverted; the deep percolation loss, where water is used with care, could be very nearly entirely prevented, and would probably not exceed 10 per cent of the water applied; the evaporation loss, where the crops will permit deep furrow irrigation and cultivation, will probably not exceed 15 per cent of the water applied; the surface run-off loss or waste can be eliminated. The total losses for these conditions will be about 27 per cent.

To sum up these results based on experiments typical and representative of irrigation practice in the West, it is conservatively estimated that 76 per cent of the water supply diverted from the stream is wasted or lost, but that by adopting means of conservation which have been used successfully in irrigated dstricts where water is valuable the waste and loss may be so decreased that the water supply will serve two or three times the area served with the irrigation methods now prevailing in many sections.

New Woolly Aphis Control

Mr. T. Machida of Japan has recently found a very satisfactory wash formula which has been found to be of much value in the control of the woolly apple aphis. His recommendations for the various ingredients to be used are as follows:

Rape-seed oil, 3 1-3 pints.
Sulphur, 1 1-2 ounces.
Turpentine, 7 1-3 ounces.

The rape-seed oil should be boiled alone for a very short time, followed by adding the turpentine slowly, stirring continually until they are thoroughly mixed. Stir in the required amount of well crushed sulphur. Use a strong fire and allow to cool, when the mixture assumes a darkish color. Paint the attacked parts of fruits trees. This wash can also be recommended for use in the control of other aphids and the destruction of their eggs.—Monthly Bulletin State Commission of Horticulture.

Profitable Dairying in the Imperial Valley

THE biggest thing in Imperial county by far, outside of the alfalfa, which is the foundation of nearly everything there, is dairying. The advance in this industry has been spectacular. In the year ending September 30, 1912, there were produced four million odd pounds of butter; in 1913, 5,398,228 pounds, according to the State Dairy Bureau—where a decade before there was little more than a desert, and progress is being made more rapidly than ever.

Just the conditions under which dairying is done can be described by telling of a particular dairy, that of McPherrin and Rood, near the town of Imperial, being typical and well managed. In fact some features upon it are worthy of emphasis as being a great improvement over usual methods.

Model Jersey Herd and Dairy Barn, Near Heber.

On this place there are given to dairying 110 acres, plus small space for barns and yard, and land occupied by irrigating ditches and roadways. This land keeps 102 milking cows, two bulls, eight head of horses for general farm work and enough young stock to make a total of 150 head. A small amount of cotton seed is purchased for the cows, but on the other hand, many hogs are turned off every year and alfalfa provides a big part of their feed. These figures show fertile soil and fine management. The cows likewise are fine producers and so good feeders also.

Pasturing Universal.

A foundation fact in Imperial county dairying is that the cows are pastured continuously. Furthermore, there is good pasture at all times. Hay is fed, but it is rather a supplement to pasture than a basis. Pasturing is called for by the hot summers, which makes it more desirable to feed green than to cut hay. Furthermore, the soil is so heavy that proper pasturing does very little injury to a stand, possibly no injury at all, and the green feed is so much better for the cows than dry hay that as heavy milk production per acre may possibly be secured by pasturing as by any practicable system of intensive culture. These facts will indicate clearly the fundamental features of Imperial Valley dairying.

The leading feature of pasture methods on this place is probably the fact that the ranch is divided into small fields of about 10 acres each, so that the cows may eat the alfalfa down quickly and thoroughly and be moved from one field to another with little delay. This gives almost as little setback to alfalfa as if it were made into hay and is one reason for the large acre production on the ranch. The cows are divided into two herds, pure bred Jerseys, and grades. Thus, there will be about 35 or 40 pure bred cows on one pasture and 65 grades on another.

Small fields are, of course, a standard method of pasturing alfalfa, and the most interesting thing to most readers will be the method of handling things in winter. Alfalfa has a long growing season in Imperial, almost 12 months long. Cuttings may be made sometimes as late as December 1 and much alfalfa the first week in March looked as if it needed cutting, but the farmers apparently did not think so, or were waiting until they had to put the machines on. Delayed cuttings are as common there as anywhere.

Well, early in October, or as soon as the weather cools up a bit, Mr. Rood starts sowing barley in his alfalfa. As soon as the cows have eaten down a field he puts on the renovator and discs and double discs it, then sows 80 pounds of barley to the acre. When the cows are taken off the next field that is treated in the same way, until by about the middle of November all eleven fields have been cultivated and planted to barley.

That 80 pounds was no mistake. Mr. Rood plants that amount so as to have as fine a quality of hay or pasture as possible. Less seed by far would do, but the barley would be coarser. Then, of course, less seed will sprout in alfalfa than on clean plowed ground.

When the cows come back to the first field, six or seven weeks after planting, the barley is still rather small, but by the second pasturing it is fine and vigorous. The idea, of course, is to get plenty green feed all winter, as would not be the case if the alfalfa were left to itself, and the barley gives lots of feed. Barley also balances up alfalfa nicely and gives the cows a valuable change of diet. Foxtail does not bother alfalfa in the valley to amount to anything, so barley planting has not the purpose of smothering foxtail, as is the case most places.

By spring some fields are likely to get so much ahead of the cows that they have to be cut for hay and three tons of hay is not a bad yield. Then as summer advances the barley diminishes in growth and by about the middle of April the alfalfa alone holds sway and continues to do so until fall again. The barley growing apparently checks the alfalfa not at all and perhaps does it good. It certainly does much better than it would if it were pastured alone.

Simple Housing.

Elsewhere it was mentioned that cattle need no housing beyond a roof for shade and that walls were totally unnecessary. Many dairymen just milk in the corrals, which is dusty and bad for the quality of the milk, also inconvenient, as cows move around and cause trouble for each other and the milkers. The milking shed here is shaped like an "E" with the middle arm missing. There are no walls and a corrugated roof. The cows go to their stanchions from the inner side and the feed is put in the mangers from the outer side. The cows are milked at 2:30, morning and afternoon, and are fed alfalfa hay with three pounds of cotton seed, not the meal, but the seed itself. After milking they are put on pasture again, and always being quite well filled with hay and well accustomed to alfalfa pasture, bloat is not as common as might be expected.

Cotton Seed.

Cotton seed is the great feed to go with alfalfa in the Imperial Valley. There are thousands of acres of cotton in the valley and lots of seed, which is sold for about $15 per ton, though oil mills take a good deal. It gives a change of feed for the cows and balances the ration up at bit, so they claim. Cotton seed meal would not balance up alfalfa, but would make it more unbalanced. The seed contains good supplies of oil and so is a help. Some dairymen claim that the cows not only give more milk and fat as a result of feeding the seed, but that they actually are able to feed the fat into the milk, that is, the milk is richer when seed is fed than when it is not. Anyway, cotton seed is highly favored on the McPherrin and Rood dairy, as well as others.

Both the hay that is fed and the cotton seed is put in the open yard without regard to shelter, as the air continues so dry that the feeds are kept in perfect condition.

The milk house behind the barn is screened on all sides, walls coming up three or four feet. Otherwise, there is the regular equipment of an up to date dairy and in spite of the intense heat in summer the cream goes to the creamery in good condition. Cream in the valley is collected every day and although it may sour, if it is produced under good conditions, it is a clean sour and makes butter that brings full price in the markets. The cream cans on this dairy are stood in tubs of water until collected. In the wagon the cans are covered with wet sacking and sheltered from the sun by canvas.

The system of manure disposal on this place is unique and good. Instead of having the regular gutter behind the cows, there is simply a step as deep as an ordinary gutter and about three feet wide. The manure stays here and the urine runs off to be caught in a concrete drain and carried to a pit, from whence it is pumped to the irrigation ditch and thus returns fertility to the soil. The system is much more convenient than washing manure and all to a pit where there would be difficulty in pumping it out.

Likewise, the arrangement is more convenient for the milkers.

The manure itself is hauled off every day and applied to an asparagus field. McPherrin and Rood are very successful asparagus growers and asparagus does best with plenty humus in the soil, so the dairying is a very valuable adjunct to the asparagus culture.

Watering Methods.

A fundamental reason for the success is the method of watering the cattle. The irrigation water carries mud galore. Commonly it is run into settling tanks and the cattle drink therefrom, usually getting a good deal of mud in the process. The water is likely to be warm and possibly somewhat stagnant as well. This is bad for the animals and some live stock ailments are attributed to the muddy water.

There is a settling basin on the highest point of the ranch and the clear water is pumped into a tank and carried from there by underground pipes to drinking troughs in every field, being cleaner, cooler and better than under the old way. It is the same water used at the milk house and for domestic purposes.

This dairy is only about three years old, but is one of the most successful in the valley. The pure breds are of high standard and came in part from the Ladd herd in Oregon. Their leading herd bull, Erebia's Diploma Boy, is an excellent individual.

Aside from the quality of the stock, the design of the barn, the method of handling alfalfa and the system of watering, as well as strict attention to details, all make the dairy a good example of what an Imperial Valley dairy ought to be. And when an Imperial Valley dairy is what it ought to be, it is something to be proud of.—D. J. W.

Keep in touch with your college of agriculture and experiment station. No farmer should be without the bulletins of these institutions. They deal with practical matters as vital to the progressive farmer as the text book is to the school boy.

Don't fail to enrich your mind by good healthy reading matter. It is as necessary as enriching the soil.

A bran mash and a day in the pasture will be good for the horse off his feed.

Permanency of Value in American Beef

By M. E. Aldridge

NOW that the tariff is removed, it is a matter of much concern to the cattle raisers and farmers, whose annual income is largely through the sale of beef cattle, what the reckoning will be.

The slump in cattle prices which occurred directly the bars were let down, brought the beef raisers to a more poignant understanding of what tariff, means than all the rant of political argument ever accomplished.

Those of optimistic tendency anticipate no pronounced depression of prices that will continue, hearkening to the authoritative statement of investigators who aver that the dread of an overwhelming influx of Canadian cattle, Argentina stuff and South American beef cattle are but bogy fears, for, as a matter of fact, Argentina and South America—it is alleged upon the best authority—are declining steadily in their beef production, while the population is steadily advancing, the actual supply being 300,000,000 to 400,000,000 short of what it was a few years ago. It is further claimed, authentically that the cattle are such that do not meet the requirements of either English or American consumers of beef, being merely good canning stuff at best. In time, doubtless, the quality will be improved, but it will be years and years, possibly as long as it will take America to replete her diminished herd, if she ever does.

Canada is said to be feeling an actual shortage of range stock.

Furthermore, the admission in this country of the entire chilled beef from Argentina and Australia met with such poor approval from the beef-eating populace of America as to discourage to a certain extent the handling of it by the meat markets. The unhappy cattle raiser will not admit, either, the disadvantage the poor quality, tick-infested Mexican steer and cow has with the beef steer of the United States.

In a land where such lawlessness reigns as in Mexico there is little danger of that country becoming a successful competitor with America, where her cattle are bred and fed for beef under most congenial conditions. Thus the merits of the prime quality of American home-grown beef must command for its producer its own value despite abundant supplies of an article of lesser gastronomic quality.

The stupendous scarcity of beef cattle in this country is of course beyond question or comment, and unlimited time will be required to bring it anywhere near the once engrossing number. The drought conditions in the East and other parts of the United States last year, which compelled the turning of so many cows and heifers into market notwithstanding the warning, imploring cries emanating from every agricultural publication in America, and the never-lessening slaughter of thousands of veal sacrificed to a gluttonous trade, regardless of prospects for future supplies, cannot fail to have its effect for years to come in high-priced American beef.

It is largely those of pessimistic tendency only who are in a grouch over the present outlook of the beef situation in America.

The extraordinary prices paid for beef cattle in this section (Shasta county) this last summer keyed the cattle raisers to the expectation of prices for another season's output of beef beyond the most extravagant dreams that could have possessed the grower a few years ago—dreams that were probably realized the summer of 1913 when anything in the line of beef found a throng of rivaling purchasers readily paying from 12½ to 14 cents a pound. Then the crash. The tariff removed, a shocking thud. The optimistic, though, have recovered enough to smile and hope. The pessimistic groan and wail ruin. All are waiting.

Cattle on Shasta County range.

Doubtless there is disappointment in store for cattle raisers who figured on yet higher prices for their beef in 1914, many even withholding cattle in the face of the highest prices ever paid for beef. How much, the individual speculator will alone know.

Time was, not more than seven or eight years ago in this country, when the local beef raisers accepted offers of from 6 to 7½ cents for beef. They could afford to eat beef then and everybody ate it. It is a rare thing during the recent era of high-priced beef for a farmer to butcher one, and, if he did, he could not afford to eat much of it and would find a very limited market for that which he was compelled to sell.

Although at the low prices paid for beef up to four and five years ago, cattle raisers grew rich, settlers created homes and farmers paid off mortgages with apparently no greater struggle than during the much-mooted more prosperous times of recent years.

This county (Shasta) contains several retired capitalist cattle raisers and farmers, who produced beef as well as farmed, and who have made their fortunes during a period of cheap beef at prices lower than ever again will occur under any circumstances. In a period, too, when the range was so overstocked and the cattle so poorly cared for that each spring disclosed the range strewn with bleaching bones of cattle which had failed to survive a storm period for the want of feed and attention for a few short weeks.

With but little change in range restrictions by the occupancy of settlers, and a highly improved condition from the scarcity of cattle feeding over it in recent years, the same opportunities await the cattle raisers and particlularly the farmers to prosper in the business of raising beef, now as then. True, much of the once free and outside range is now owned by lumber syndicates, while the forest reserve system controls much of the outside range, each demanding remuneration for pasturage privilege, and the forest reserve restricting the number of head permitted to range over its area.

Even the railroad companies, owners of vast areas of land, are now in many sections compelling remuneration. Although these obstacles are not really insurmountable or strictly prohibitive to the following of the industry of cattle raising, they greatly handicap and of necessity increase the cost of beef production.

However, the result of such procedure which was, or is becoming, oppressive because of increasing stringency of demands by the powers referred to, has led to the forming of an association of stockmen over Northern California and is called Northern California Livestock Association. Its purpose is to form a body of sufficient size and strength that Congress and the State Legislature will hearken to their call for aid and protection.

Prior to the larger association, local associations of cattle raisers collectively rented range land around their home districts, thereby controlling to a certain extent the range their cattle graze over. By such means the grazing fees became a less burden to the individual, because he paid into the association grazing fees per head.

The new association gives advantages of carefully conserved range, which lessens the old disastrous loss of cattle by the badly directed or careless manner of ranging stock as prevailed in "the good old days."

Another greatly improved condition over the old indifferent method is the very wellbred type of cattle that now generally prevail. Types are bred for beef, and the scrub stock is eliminated. The improved herds are too valuable to be allowed to take chances in surviving the rigors of bad weather browsing as of old off the tops of young firs, cedar and brush that crown the banks and levels of deep snow.

Three head of beef steers of the present type represent more value to their owner than five head in the days of the raw boned, coarse haired, leggy, half wild and wholly self-sustaining creature which crowded the starved range years ago, when, even then, cattle raisers grew rich.

Often beef buyers have informed the beef raisers here that meat handlers and dealers in beef in San Francisco and Oakland meat markets claim that the Shasta county beef cut to the best advantage of any cattle brought into the market, being remarkable for fine grained, juicy and well-marbled meat, a quality attributed to the cattle grazing on the podded, or berry bearing and tender - twigged brush, especially the podded blue brush which grows so abundantly, spreading far and wide over the Shasta hills. Such browsing, with intervening grassy meadows and other grazing facilities, obtaining over the vast range, with proper attention and feed during a period of bad weather in winter, must result in a superior beef breed distinguishing them indeed from the common herd.

Bearing on the above assertion is that of John T. Craine, judge of the beef stock exhibition at the 1913 California State Fair, who also said that "beef stock in California ranked high."

Little should the cattle raiser worry over the removal of the tariff. Though the price decline to nearly half the present price the people cannot be in a more deplorable condition than during the period a score of years ago when money was made raising cattle and farmers prospered despite the low price of beef.

Perhaps if cattle prices drop lower, stockmen and farmers can afford once more to enjoy a delectable steak or juicy roast without sighing over the cost of it, even when home grown.

Dairy Cattle Performance.

When a cow will produce twenty times her own weight in milk in a year, she may certainly be regarded as a valuable piece of property. When a cow will produce 800 to 1,000 pounds of butter fat in a year, she is a prize.

Such records as these are found among all the prominent dairy breeds and they are increasing in number in each breed at a most satisfactory rate. Just now there is a competition for the championship in milk and butter production in the Guernsey breed. The championship of that breed is held by Spotswood Daisy Pearl and her owners are using every means to improve her record, while a Pennsylvania cow, May Rilma, is contesting her championship with vigor. This Pennsylvania cow has produced 811 pounds of butter fat in nine months, and both she and the present champion are being fed under the most improved methods, which include a variety of grain and forage and the addition of a succulent ration, such as beet pulp or something of that kind, to increase the appetite and make the ration more effective.

Tractor Demonstration at West Sacramento

THE dates for the proposed demonstration of gas distillate and oil burning traction engines and ground working tools used in connection with them has finally been settled. On account of the adverse weather encountered at the Fresno meeting it was decided to change the date of the meeting announced for Marysville until a late enough date so that no chances would be taken with unfavorable weather. In consequence, after giving the matter careful investigation and taking into account the wishes of all concerned both as exhibitors and spectators, the dates settled on are Thursday, Friday and Saturday, May 7, 8 and 9.

The place of meeting has also been changed from Marysville to Sacramento, and in consequence all notices given heretofore regarding Marysville should be disregarded and applied to Sacramento for the above-named dates. This extension of time has worked in many ways to the advantage of those interested in tractors and implements due to the fact that the additional time gives greater opportunity for California manufacturers and dealers to prepare for the event in a fitting manner, gives more of them the chance to enter and, above all, gives times for completing every little detail of arrangement so that both in attendance and machines and in the manner they will be shown the onlooker will see a more highly developed and a far more complete show than would have been possible at an earlier date. As evidence of the splendid opportunity to be given by this demonstration to study and know farm tools, the following partially complete list is given—by the opening day this should be considerably increased, but even as it stands there are enough entries for an enormous meeting:

Minneapolis Steel & Machinery Co., tractors.

California Moline Plow Company, showing ground working tools.

H. C. Shaw Company, showing tractors and tools.

International Harvester Company, showing tractors and implements.

Hackney Manufacturing Company, showing Hackney auto plow.

Avery Company, showing Avery tractors.

Holt Manufacturing Company, showing large and small "Caterpillar" tractors.

Schmeiser Mfg. Co., showing grading tools.

C. L. Best Gas Traction Company, showing C. L. Best "Tracklayer" tractors.

Yuba Construction Company, showing Yuba ball tread tractors.

Rumely Products Company, showing "oil pull" and "toehold" tractors.

Golden Gate Traction Company, showing "Golden Gate" tractor.

Lambert Company, showing "Lambert farm and road" tractor.

Samson Iron Works, showing "Samson" tractor.

Fairbanks, Morse & Co., showing "Fairbanks-Morse" oil tractor.

J. I. Case Company, showing tractors and agricultural implements.

John Deere Plow Company, showing plows and agricultural implements.

Oliver Chilled Plow Company, showing plows and agricultural implements.

Killefer Manufacturing Company, deep tilling and sub-soil tools.

Benicia Iron Works, showing "Benicia" plows.

Baker & Hamilton, showing implements and plows.

There will be also road grading tools and auto trucks.

The same general plan as announced and carried out at Fresno will be applied at the Sacramento meeting. There will be no contest features, no prizes, ribbons, awards or judging. It will be simply a showing of the various machines doing their work under actual average farm conditions. No "stunts" or tests or freak performances will form any part of the official programme. In every way it is planned to be conducted as a serious business demonstration for genuinely interested people who want real knowledge and facts about all tractors in general or one in particular. The meeting, on account of the large number of entrants, already indicates that it may be the largest gathering of its kind held in North America.

As at Fresno, the Sacramento meeting will be under the field direction of Prof. F. L. Peterson, head of the Division of Farm Mechanics at the Agricultural College, Davis. Prof. Peterson will be assisted by a sufficiently large committee to insure proper care to everyone. Special railroad rates of one fare and a third will be in effect on both the Southern Pacific and Western Pacific railroads from local points and on account of the central location of Sacramento, with many trains per day and with good hotel facilities, there is every natural reason to believe an attendance will develop rivaling that of the State Fair.

Orchard and Farm has been particularly fortunate in securing land for the demonstration in a part of the West Sacramento Company's holdings. Approximately six hundred acres are available, practically adjoining the townsite of West Sacramento; also on splendid main traveled roads and within walking distance of electric lines. The location is favorable for the meeting, both in the matter of location and in character of soil for such work. This soil will allow demonstrations of every type of large and small tractors; also of every kind of tillage tool. It thus fulfills the requirements necessary for the success of the gathering.

At this early date it is impossible to publish the programme for each day for the reason that the list of entries is still incomplete. Suffice it to say, however, the programme will be arranged to give equal opportunity to investigate each tractor. In the May issue of Orchard and Farm further facts will be given. Each subscriber and reader is urgently invited to study with much thoroughness the facts about the iron horse. Remember the dates, May 7, 8 and 9. And the place, Sacramento, headquarters to be Hotel Sacramento. Further additional facts may be obtained later by addressing Orchard and Farm.

Fuels for Tractor Engines

THE recent tractor demonstration conducted by Orchard and Farm has developed a great interest in the varying types of machines and in the particular services that each is best fitted to perform. Yet even after a person has found a machine that just suits him as far as work goes, he has to think something about fuel, or rather, the matter of fuel should be one of the leading features in determining the selection of a machine.

At the Kansas Agricultural College recently there was an address by an expert on fuels, from which we take the following on the relative advantages and disadvantages of different types of engines, also something about the method of combustion that may prove of much value in the life of an engine and its efficiency. The speaker said:

"Liquid fuels are obtained from crude oil, this oil being found in a number of our States as well as in foreign countries. Each locality producing oil has characteristics which may differ from those of an oil taken from a field immediately adjoining.

"The base of solid portion of Pennsylvania and Eastern oils in general is paraffine, while that of oils originating west of the Rocky Mountains, and in some other localities, is asphalt, while in Oklahoma there are mixed bases.

"Crude oil, owing to the valuable unrefined oils which it holds, is not generally used for fuel, but when refined gives several liquids which can be used as a fuel in the properly designed engine.

Effect of Hot Engine.

"Gravity, distillation, thermal or heat value are combined in making a perfect fuel; and knowing that heat plays considerable part in the action of oil fuel, it will be seen that the temperature of the engine also has a very important part to play in our consideration of fuels. The low compression engine runs at a low temperature, and these two factors mean long life for any engine, with freedom from repairs, as the fewer internal strains put on machinery the longer it will wear.

"If we should attempt to use lower grade of fuels, where not only the gravity is low but the distillation point as well, we must in some way increase the temperature in the engine to insure combustion, and this is generally accomplished by increasing the compression, and in some instances there are also added hot chambers or bulbs.

"This increase of temperature and increase of compression also increases the cost of maintenance and repairs, and the builder has to get more money for this type of engine, because he has to make all parts heavier to stand the enormous strains and keep repairs within a reasonable amount.

Water Smoothes Expansion.

"Hot water is mixed with a fuel to smooth out the expansion and burning of the charge of fuel. As soon as the fuel is ignited in the cylinder the heat of the burning oil expands the air, driving the piston forward, and at the same time converts the fine mist of water into steam, which expands into the heat of the burning charge, causes a chemical change in the steam, and it becomes then two gases—oxygen gas and hydrogen gas. The oxygen gas combining with the finely divided carbon of the fuel allows of an opportunity of the hydrogen gas to further unite with the oxygen carbon combination and all three burn. The carbon forms the base of this combustible combination, and the oxygen supporting the combustion, the carbon is consumed, and that is the reason why we have perfect combustion in a low-compression oil engine, and why there is no carbon deposit in a correctly designed oil engine. Furthermore, there will be found considerable carbon deposit in a gasoline engine, there being no means of getting rid of the carbon by burning it as provided in a modern oil engine.

"By burning this carbon it helps to increase the power of the engine, requiring less fuel, and the entire series of operations performed in the cylinder on an oil engine makes it without question our most economical, best, and longest-life type of engine."

Canned Cow Feed

While ensilage is an old time feed stuff in certain sections of the United States and while its use is rapidly spreading all over the country, it has not yet received the attention which it deserves in the Coast region.

California is developing rapidly as a dairy State and her dairy products now rank second only to her fruit products in value. With the use of ensilage, these products could be immediately and largely increased and the expense of production very materially lessened.

It is a part of the plan of the department of live stock of the Panama Pacific International Exposition not only to show a number of silos filled with ensilage, but to show the ensilage cutting machinery in motion in the fall of 1914 and during the Exposition period; and also to show the value of ensilage as a feed for both beef and dairy cattle.

It may not have been generally known that kafir, milo and other non-saccharine sorghums are excellent material from which to make ensilage, and with their drought-resisting properties, they will insure a supply of this succulent feed during the dry periods when it is most needed.

There will be no exhibit of practical utility in the Exposition grounds of greater value than the exhibit of silos and ensilage in the department of live stock.

Value of Straw as Fertilizer

A large amount of straw is shipped from a county in Missouri to a nearby paper and strawboard factory. This straw brings the farmer about 50 cents per ton. A county agent recently found a pile of about 1,000 tons at Sikeston ready for shipment. He computes that as a fertilizer this straw is worth $2.50 per ton in addition to its value as a means of adding organic matter to the soil. He is making a campaign of the county in an attempt to show the inadvisability of the farmers selling their straw and urging its more extensive use as bedding in stables and feed lots. Straw used as a top dressing on fall wheat has been found to practically insure a good stand of clover on lands where clover is otherwise grown with great difficulty.—U. S. Department of Agriculture.

The suggestion regarding the value of straw as fertilizer will hold particularly good in California because our soils are usually very poorly supplied with humus, which straw would provide. The straw also would make a better fertilizer after being fed to stock of some kind than when worked in alone.

Worms in Pigs

The Veterinary College at Ames, Iowa, has announced the following formula for the eradication of worms in pigs: "Santonin, one grain per thirty to 80-pound shoats; areca nut, one-half grain per pound live weight; four grains santonin is the maximum dose for a large hog. Keep the hogs off feed for twenty-four hours. Mix enough of the medicine in a thin slop for twenty hogs. Feed in a clean trough. Repeat treatment in thirty days, as eggs of worms in the intestines will not be affected by this treatment and a new crop of worms will result."

Lessons From Tractor Demonstrations

THE great point of the coming tractor demonstration will not be to prove that tractors can do good work—that has been proved already—but it will be to develop before the onlookers and investigators the adaptability of each make of tractor present for some special kind or kinds of work. It is now a fact that "There is a tractor for every need," and the leading feature is to find the tractor for the need.

Take the method of traction alone. One great type of machines have large round wheels. Another type runs on a flat surface, that is, on a belt rather than a wheel. Then the smaller machines have all sorts of variations in a tractor bearing surface, that give all sorts of advantages in the way that the weight comes on the ground, or in the condition that the ground is left. All of these can be appreciated only by examination or careful description.

There are engines of various types and machines that burn the various kinds of fuel. A catalogue will show these differences. The conduct of the demonstration, however, will have a special value in the fact that the fuel used will be officially tested, so that visitors can size up accurately the conduct of every machine when it uses a known amount of fuel of definite quality.

"The tractor for every need" is coming more into the hands of the small farmer from two different angles; one, the building of small tractors; the other, the doing of custom work. The great efficiency and wide possibilities of service from small machines make it profitable often for the man with 40 acres to own a tractor.

Then custom work is permitting the tractor to do work for numerous owners of small, intensively cultivated acreages who would not own tractors themselves. They can thus get heavy work done that would be impossible or extremely expensive, if they had to keep their own stock for it, and to them the uses of tractors is of big importance.

At the other end of the same deal is the tractor owner who may own little or no land, but finds tractors profitable through custom work, doing more work even than the man with large acreage who works his own land only. The mechanical age we have entered causes many boys with a mechanical tendency to leave the farm, whom the tractors will keep at home to a better and more successful life.

A very valuable feature of the tractor show is to be the display of plows, harrows, cultivators and all the other instruments for cultivating the soil. The tractors are naturally going to demonstrate by pulling something, and they will pull all sorts of tools and stir the soil in all sorts of ways. Thus there will be types of plows, harrows and cultivators of all shapes and kinds seen in operation. The demonstration of tools is in some ways as valuable as the demonstration of tractors.

As well as the tractors and the soil tools, there will be several of the best makes of auto trucks giving demonstrations, and the demonstration, though pre-eminently a tractor demonstration, is working over to be a combined tractor, soil tool and auto truck demonstration.

Almost every tractor built has equipment, when the buyer so desires, for doing all kinds of stationary work. As yet this has not been of great importance in California, though there are times when it comes in well. Tractor engines are built with the highest efficiency and can come up with any kind of an engine for stationary work.

If a rancher wishes to pump from a stream in emergency, or has several wells around his ranch from which he wishes to get water only occasionally, his best idea may be to go from one to the other with his tractor with stationary equipment, hitch on the belt and get going, rather than to have an engine or electric motor for each well.

Some dairymen object to silos because they believe that it costs too much to cut the silage and put it in. The tractor will do regular farm work and cut and fill the silo too, and then go and do the same for a neighbor or several neighbors. Stump pulling, hay baling, and many other kinds of work are done similarly.

A fundamental point to the larger tractors is the great power that they can apply at one time. The main thing that has "worn out" our wheat lands has not been the wheat, but the shallow cultivation, the formation of a plowsole so thick that it has packed the subsoil the first foot down and thereabouts, destroyed the life of the soil beneath, and worn out the humus and life of the top four or five inches that have been continuously tilled. It is a big job to break up that thick, artificial hardpan and the tractor is the thing that can do it. Even pretty small tractors can display a great amount of power.

Tractors have been valuable for the way that they have worked at all temperatures and for long hours. Heat offers no difficulty to a tractor unless more care to the engine cooler has to be given, and it works night and day.

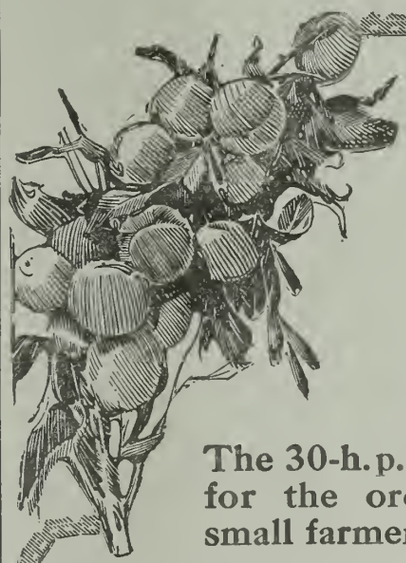
The strangers who are struck with the long hours that have been spent by a crew of men in the burning heat at harvest time, often remark facetiously, "Why don't you work a couple of hours longer?" The reply is, "We would, only the mules couldn't stand it." Under any conditions there is a limit to the length of time that horse or mule flesh can keep going and heat makes it still harder. There is no limit with a double shift of men, good mechanics and a searchlight, to the time that a tractor can put in, heat or cold, dry plowing, or plowing with the soil in ideal mellow condition.

An important feature of tractor differences is adaptability to road work, or straight hauling on improved roads. Both large machines and small machines have special methods. One manufacturer has facilities for speeding up, another prefers to go slowly and haul a heavier load, for self-evidently, the heavier the load, the slower the speed. The man that expects to have the tractor haul his crops to market as well as having it till the soil and do stationary work, finds room for examination of types and makes.

California has a special claim on all kinds of tractors, being early in the field through our great wheat growing ranches. California is the foremost fruit State of the Union, the pioneer in the designing and manufacture of orchard tractors. Of the States with a special demand for tractors it is among the foremost in its vast home supplies of cheap oil, and the gas tractor is making most rapid progress of all types. About eight years ago there were two manufacturers of gas tractors in the country; three years ago about ten, and now there are about fifty, most of them making two or more types or sizes of tractors. Practically all of the tractors at the demonstration—probably all, will be gas tractors, the highest achievement in tractor development yet secured, and the one specially adapted to California fuel conditions.

This demonstration will have one of the greatest assemblage of tractors ever occuring, all in operation under as nearly field conditions of all kinds as possible. This is to give the opportunity of seeing how tractors can do all kinds of work and adapt themselves to all conditions. With them will be a fine assortment of soil tools and a fine assortment of modern auto trucks.

It is often stated that sorghum is "hard on land." Is this statement true? If so, why is it true? And if true, what might be done to reclaim the land? Are there any plants that you know of that benefit land?



Save the Moisture and the Trees

The 30-h. p. Caterpillar is built for the orchardist and the small farmer.

—It is *guaranteed* to do the work of 14 good sized horses.
—It will turn in it's own length. It steers as easily as an automobile. It won't bark the trees.
—It is light in weight and only 60 inches high without canopy.

CATERPILLAR
Reg. U.S. Pat. Off.

These are important points in themselves. But coupled with the Caterpillar track, they make an ideal orchard and small farm tractor.

—The soil in an orchard should never be packed. You cultivate to save the moisture. Packed soil means loss of moisture. The Caterpillar tracks prevent all packing. They leave the soil loose.

—The loose soil makes tractor operation difficult. But the Caterpillar tracks work on any soil. They never slip or mire. They work even in swamps.

The Baby Orchard Caterpillar will do all your work. It will plow—cultivate—seed. It will haul your crop to market—over any roads—muddy, hilly or soft. Its belt attachment will do all your stationary work. Write us for catalog. Tell us about your work, acreage, etc., so we can pick the right outfit for you.

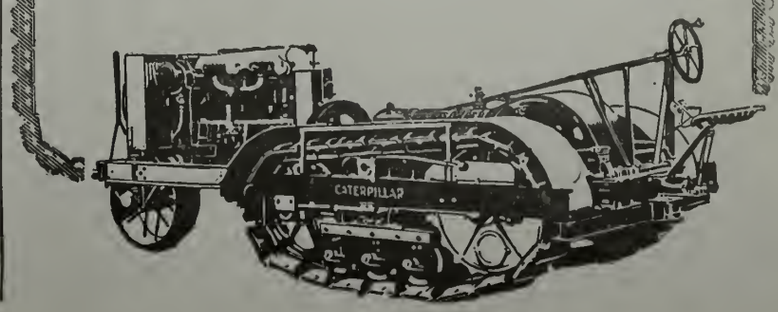
The Caterpillar is built in three sizes, 30, 60 and 75-h. p. We also furnish plows, harrows, harvesters, scrapers, etc., all built extra strong for tractor work.

Send to the nearest branch for bulletin F 3 describing 1914 Caterpillar construction in detail.

The Holt Manufacturing Co.

BRANCHES

Stockton, Cal. San Francisco, Cal. Los Angeles, Cal.
Portland, Or., 617 Lumberman's Bldg. Spokane, Wash.
Calgary, Alta. Fargo, N. D.
Dallas, Texas. Peoria, Ill.
New Orleans, La. New York, N. Y., 50 Church St. Wichita, Kansas.



California's Advantages With Hogs

THE commonest thing in California's swine writings is to speak of the great opportunity for the farmer to raise more hogs on account of the big demand for pork and the fact that large numbers of Eastern hogs are imported every year. The exact advantage in price is not figured out or stated.

Prize winning Poland China boar of the Corn Belt.

In order to get at definite facts in the matter and to show the California farmer exactly where he stood in competition with the Eastern swine raiser, "Orchard and Farm" conducted an investigation among San Francisco packing houses and looked up freight rates from California and other points to stockyards in the bay region and figured to dollars and cents a comparison between the prices of pork on the hoof coming from parts of our great interior valley and from the Eastern sections which ship many hogs to California. These facts follow:

On March 17, 1914, the local packers were paying 9 cents a pound for high quality live hogs delivered in San Francisco. On this date the Western Meat Company were slaughtering hogs shipped from Idaho points, as they could not supply their needs with Coast hogs. If California produces the same quality of stuff as comes from Idaho and other points to compete with California hogs, she has a clear gain from about a cent to near a cent and a half a pound over her competitors on account of freight rates and shipping charges. This is explained by the following facts.

A 36-foot car, single deck, will hold ninety hogs of 150 pounds each. Such a car from Idaho points to San Francisco figures freight $130. To the freight must be added the expense of feed and care in transit amounting to $45 per car, making a total for delivery of $175 a car as compared with $30, the average rate per carload from San Joaquin and Sacramento valley points, or a saving in favor of the California hogman of $145 per car or actually $009 a pound—$1.63 a head.

Great quantities of hogs are shipped from Missouri river points to San Francisco, where the freight for such a car is $240, feed and care $65, making a total of $305 against $30 for the Sacramento or San Joaquin valley farmer, leaving him an advantage of $275 per car or $1.70 per hundredweight.

This with hogs selling at $11 in San Francisco, the price paid at point of shipment per hundredweight would be as follows:

From Missouri river points----$ 9.30
" Idaho points ---------- 10.00
" California ---------- 10.70

This gives the California hogman a clear advantage of from 70 cents to $1.60 per hundredweight. Shrinkage and loss by accident and otherwise incident to the long haul would make this advantage mount still higher.

Competent authorities give an estimate of the daily kill in San Francisco at from 700 to 1,000 hogs, or an average of 800 a day, or 24,000 per year. Of these approximately 40 per cent are imported from the East, or about 100,000 head per annum. This shows a total of approximately $2,000,000 annually sent East by San Francisco slaughterers for live hogs, to say nothing of the enormous quantity of pork products which are shipped into this State.

Summing up, the California farmer has an advantage of from about a cent to a cent and a half over competitors in selling a properly finished hog on account of freight and shipping costs, and the market is so great that it will be long before the demand can be fully supplied. It may require better methods of breeding, feeding and marketing, but the advantage surely exists and any handicaps of the California farmer are more than made up by soil and climatic merits of our State.

Culling Sows

If a sow raises but three pigs, says Prof. Smith of Purdue University, it means that they are costing $5 each. If instead of three she raises five, the initial cost is reduced to $3 per head. If she is a very prolific sow she may raise ten, in which case the debt represented by each pig is only $1.50.

When the breeder heartlessly culls out his sows that produce stock that never attain good size, when he promptly sends to the block the sow with small litters; when he gets out of his herd the peevish hogs and the hogs of low vitality, then he will hear less about the relative advantage of the cross-bred hog.

Young hogs should not be given crowded quarters. In order to keep them in a healthy, growing condition, a proper diet should be fed. Healthy individuals possess a certain amount of power to resist disease, and this plays no small part in preventing it.

Show Dates at the Exposition

WHILE there will be a continuous show of live stock in the Panama-Pacific International Exposition throughout the entire period from February 20 to September 20, the greater interest will center in the competition for premiums, which will occur in the fall and will be really a separate division from that which includes the view herds or permanent educational exhibit.

Animals intended for the view herds or permanent educational exhibit, must be in place not later than February 20, 1915. They will remain as herds, or studs, or flocks, during the entire period, as mentioned, but individual animals or birds may be sold and removed from time to time and their places taken in the view herds or flocks, so that the latter will remain intact.

It is a well known fact that every human being is interested in some form of live stock, and it is also a matter of history that all great expositions heretofore have confined their live stock exhibits to a very brief period late in the fall, so that the ordinary visitor has been deprived of an opportunity to see them. The Panama-Pacific International Exposition will therefore be different from any of its predecessors, in that it will have a continuous live stock show so that every visitor will have an opportunity to study the different types that have been evolved through the breeders' art.

This is a matter of immense importance and value from an educational standpoint and will be second to no other feature in the whole Exposition.

The live stock interests of this country have the largest constituency of any industry. More depends on the economical production of live stock than upon any other one product of public importance. Not only does the high cost of living depend upon this for a satisfactory solution, but the continuous fertility of the soil is absolutely dependent upon it.

This continuous live stock show marks an epoch in exposition building and is a more ambitious undertaking than has ever before been attempted. Its success is assured by the co-operation of the different breed record associations and of enthusiastic breeders who have patriotically supported the plans for this great educational feature, as developed by Chief D. O. Lively of the department of live stock.

Each view herd, stud or flock will be selected by competent authority as typical of its breed and representative of the best type in that breed. Animals shown in these herds may also be shown in the competition for premiums, which will occur in the fall.

Definite dates for the reception of animals entering the competition for premiums have been fixed as follows:

Horses, mules and asses, September 23.
Cattle (dairy and beef), October 11.
Sheep and swine, October 26.
Carloads of cattle, sheep and swine, November 11.
Dogs, November 14.
Poultry and pigeons, November 18.
Cats, November 27.
Pet stock, November 29.

A grand showing of children's pets will close the department of live stock December 1.

Special Prizes at Exposition

The great interest shown by the various breed associations in the Panama-Pacific International Exposition is indicated in the following list of special prizes offered by leading breed associations of the United States and Europe. These prizes are in addition to those offered by the Exposition management, and may be followed by similar prizes offered by other breed associations not yet named.

American Aberdeen-Angus Breeders' Association	$6,000
American Ayrshire Association (for view herd)	2,000
American Hereford Cattle Breeders' Association (minimum)	3,000
American Guernsey Cattle Club	500
American Shorthorn Association	7,500
American Trotting Register Association	1,000
American Assn. of Importers and Breeders of Belgian Draft Horses (minimum)	2,000
Percheron Society of America (minimum)	3,000
Continental Dorset Club	500
American Hampshire Sheep Breeders' Association	1,000
American Rambouillet Sheep Breeders' Association	2,000
American Cotswold Registry Association	500
American & Delaine Merino Record Association	500
American Shropshire Registry Association	1,000
American Cheviot Sheep Association	150
National Lincoln Sheep Breeders' Association	500
American Angora Goat Association (minimum)	400
American Berkshire Association	2,000
American Hampshire Swine Record Association	5,000
American Yorkshire Club	500
American Poland-China Record	3,600
American Duroc Jersey Swine Breeders' Association	1,500
National Duroc Jersey Breeders' Association	1,500
American Tamworth Swine Record Association	500
Chester White Record Swine Association	1,500
O. I. C. Swine Breeders Association	1,500
Belgian Draft Horse, Society (Belgium)	8,000

The Government has decided that "clean Mexican cattle can come in," a dispatch says. Wherefore, bossies desiring admittance to the United States will kindly bathe in the Rio Grande, hang themselves on the international boundary line to dry, and wait for the inspector.

The feeder of any variety of stock should never neglect to feed a variety of feeds when it is at all possible to him to do so.

Much farm machinery wears out more through exposure than through use.

The Customer Seeks the Market

WHILE it is predicted that the opening of the Panama Canal will tend to shift the commercial activities of the world from the Atlantic to the Pacific area, and while this change, which is predicted by some so enthusiastically, it is believed that there will be important changes made and that through these changes the whole Pacific Coast region of the United States will derive a permanent benefit.

As illustrating the possibilities along this line, it may be mentioned that the countries of Latin America are now laying their plans through which they expect to become heavy purchasers of purebred livestock from among the herds shown at the Panama-Pacific International Exposition. This also applies to the countries of the Orient and to the Pacific islands.

A concrete case illustrates this fact and shows that the customer is seeking the market instead of the market seeking the customer. An order has recently been placed by some prominent men of the Argentine for a number of purebred cattle of the beef breeds, to be selected and sent to that country for the improvement of their present stock. This is the more remarkable because of the fact that there is probably no country on earth which can show finer quality or larger numbers of beef producing animals than the Argentine.

It is conceded by those who are familiar with the situation that Argentine now has better Shorthorns and Herefords and a larger number of both these breeds than can be found in Great Britain, which is the home of both. They are better and more numerous than either of these breeds in the United States, which has been the locality of greatest expansion and development for both, if we are to believe careful observers who report upon these facts.

This is mentioned and confirms the belief of those who are careful students, that the holding of the great Panama-Pacific International Exposition will serve as an opportunity to the farmers of the Coast and mountain States of the Union in bringing to their doors the choicest of all the breeds from which they can make their selections.

Many people in this region are interested in breeding purebred livestock, but have hesitated to make purchase of the highest type of animals, because of the cost involved in the shipment of these animals, as well as in the initial prices. The holding of this great exposition, however, will remove one of these objections and the animals will be placed on the ground with charges prepaid and ready to deliver to the purchaser.

There was recently sold in Argentine, at public auction, a Shorthorn bull, which was descended from a cow bred and raised in the United States. This bull brought the surprising price of $32,500 and the sale in which he was sold averaged more than $4,000 per head.

It is contended that the breeders of Argentine have made a practice for years of buying the best animals of the beef breeds that could be secured from Great Britain, while importers to America have contented themselves with less in quality. Whether this is true or not, it is undoubtedly true that Argentine has attained to a most enviable position in the matter of producing high quality in beef animals. It is a great satisfaction to know, therefore, that the men who have done this thing are the men who will be in San Francisco in numbers, and well equipped with money for the purchase of the choicest animals which may be shown in the exposition.

Livestock Executive Committee

A. W. Morris of Woodland, recently elected president of the California Livestock Breeders' Association, announces the appointment of the executive committee of the association as follows: S. B. Wright, Santa Rosa; F. Bixby, Long Beach; T. B. Gibson, Woodland; H. A. Jastro, Bakersfield; J. H. Glide, Dixon; Guy H. Miller, Modesto; T. H. Ramsey, Red Bluff; Romie Jacks, San Francisco; E. W. Howard, San Francisco; D. O. Lively, San Francisco; Peter J. Shields, Sacramento, and Robert Foster, Hopland.

A meeting of the new committee has been called for April 4 at a place to be named by the president. This meeting will be for the election of a secretary and the planning of work of the association for the coming year, with a special view of preparation for the livestock exhibit at the exposition.

Remove white spots from furniture by wetting a piece of flannel with turpentine and rubbing the spot hard.

The Sound Horse

By W. M. Carruthers

A LOT of stock phrases have been trotted out from time immemorial to govern the selection of horses. Some of them need puncturing. One of the most glibly quoted is: "No foot, no horse"; another: "No top, no price." A horse may be the soundest on earth, but he will not bring a good price unless he has a good top to go with his soundness. Both top and bottom are required. No one should buy unsound horses, but neither should they buy sound ones if they have nothing else to recommend them.

It is rarely that one ever sees colts unsound at birth, but hundreds are ruined by faulty environment. One of the chief conditions which we must avoid in producing sound horses is formation in breeders so faulty as to predispose to unsoundness. A blemish, which is the result of an accident pure and simple, will not be transmitted. Narrow, round hocks from insufficient carrying capacity predispose to bone and bog spavins. Sickle hocks invite curves. Short, straight pasterns and cramped hoof heads go with the side bone. Faulty surroundings in youth are the main cause for unsoundness in young horses.

Quality in horses has never fully been defined. Some call it refinement of fibre, but, letting that go for what it is worth, the fact remains that quality is recognized by refinement of conformation and texture of hair. Whether the hair dominates the quality, or the quality unseen dominates the hair, has never been fully explained. A great deal has been said about the clean, flat, ivory-like bone of some horses and the meaty, coarse, spongy, round bone of others. The first are usually called horses fully of quality; the second, horses of no quality at all. To the first is joined good feet; to the second, usually poor feet. There is usually a good reason for this, even if some of the terms and beliefs quoted have no foundation. Quality is often ingrained in horses, although it is not always recognized when it is seen.

If you have several kinds of rough feed on hand it will be a good plan to mix them up in feeding. Stock like a change of feed as well as you do, and if their breakfast can be of one kind and their supper of another, so much the better.

SAMSON SIEVE GRIP TRACTOR

No Track or Exposed Gears to Wear Out

A snap shot of Mr. F. Hoff of Lodi, Cal., plowing out entire row in his vineyard—ten feet between vines.

WHEELS DO NOT SLIP IN WET OR SANDY SOILS.

SAMSON NON-KICK ENGINE SAFETY STARTER. YOU CANNOT GET HURT.

SAMSON SERVICE DEPARTMENT as faithfully serves its customers to-day as in the past

Ask the owner of a "SAMSON" about the service and satisfaction he has had.

SAMSON IRRIGATION AND RECLAMATION PLANTS

6,000 Samson Engines in Daily Use.

We Make Them; Sell Them; Guarantee Them; All Sizes—2 to 200 Horse Power.

Write for Catalogue O. A. ESTIMATES CHEERFULLY FURNISHED

SAMSON IRON WORKS

MAIN OFFICE AND FACTORY: STOCKTON, CALIFORNIA.

Sheep Raising Profitable

THE consumption of mutton per capita in the United States is increasing every year, though the amount used is much less in proportion to other meats than in Europe. There are good reasons for expecting a continuation of good prices for mutton and lamb, and the demand for wool also may be expected to increase more rapidly than the production.

A band of Merinos on the march.

While farm-raised sheep have often not been profitable, this has usually been because of lack of proper attention and management. Variations in price of wool and mutton have stood in the way of such general interest in sheep as would cause them to be regarded as highly as they should be in the future. Ranges all over the world are now carrying about as many sheep as they can support under a strict range system, and an increase in the production of sheep products must come mainly from farms. Here, then, is the farmer's opportunity to take advantage of the increased consumption of these products.

While mutton can be produced at low cost and there is a growing demand for it, difficulty in selling may be experienced in sections where the amount of livestock produced has not been sufficient to make it worth while for regular buyers to operate. Slaughtering plants that can handle carloads are within reach of all sections, and if a sufficient number of neighbors combine to have 100 lambs of similar breeding, size and condition to ship jointly the returns are assured. It will also be possible to secure visits and bids from buyers when such a number is promised.

In countries where economy in farm management has been studied a long time, the sheep is considered to be necessary in utilizing vegetation on such waste lands as are not wet or marshy. But the sheep can hold its place on high-priced land as a meat producer alone. Compared with larger animals it has some important advantages. First, the lambs mature very rapidly, being marketable at four months of age or later, according to breeding and feeding. This is an economy because a larger proportion of the total feed goes into increase of weight than in slower growing animals. Second, the sheep consumes a greater variety of plants than do other animals. Many of such plants are detrimental to pastures and would otherwise require hand labor to hold them in check. Third, grain waste in harvesting can be entirely recovered by sheep. These facts prompt some farmers to claim that the summer food of sheep costs nothing, because what they consume would otherwise bring no returns.

Compared with hogs, the sheep has an advantage in the wider variety of materials it consumes. Being a ruminant, it makes its gain with a minimum of grain and expensive concentrates. This is especially important on lands that are better adapted to the production of forage crops than to grain growing.

Like the hog, the sheep has its peculiar ailments which sometimes result in loss as well as discouragement. Unlike the ailments of the hog, however, those of the sheep are ordinarily not contagious, and the means necessary to prevention are the same as should be adopted for the most economical production, even in health.

The most serious menace to continuous thrift in the flock is the presence of internal parasites, chiefly stomach worms. The eggs of the stomach worm are dropped upon the ground with the feces from infected sheep. The small worms are swallowed with the grass three or four days after hatching from the eggs, and reach the stomach. Stomach worms are frequently present in such large numbers as to draw so heavily from the circulation as to cause emaciation and finally death of the lamb. Mature sheep are much less affected by these worms, though they usually scatter the eggs.

Keeping the flock upon crops sown upon plowed land prevents infection. Such practice also furnishes the greatest amount of feed from each acre and the kind and variety of food upon which sheep thrive best. Plowing the land prevents danger from stomach worm eggs dropped upon it. In warm weather the flock should be moved to fresh ground every ten days or two weeks to prevent infection of lambs by larvae from eggs dropped from the ewes. If lambs are by themselves, the time between changes might be longer, but in most forage crop rotations changes will need to be made every two or three weeks.

The cultivation of the land destroys all infection from previous pasturing. Under such a system of cropping and grazing the land will improve, as the manurial value of the crops is practically all left upon the land and is very evenly distributed.

Holding Good Brood Sows

When selecting brood sows spare those that have shown themselves to be good mothers. Do not be tempted by price or any other consideration to part with them as long as they will breed well, unless they show indications of impaired usefulness. One good brood sow should be worth two young ones whose usefulness has not been proven. Attention to this matter would greatly increase the profits from growing swine.

REGISTERED HOLSTEIN-FRIESIAN BULLS

THAT WILL INCREASE YOUR PROFITS

Two of our herd bulls are from 28,000-lb. dams. Butter records average above 1,100 pounds. The only two cows in the world that have produced over 50,000 lbs. milk each in two years. Fifty cows on official yearly test. Fifteen cows, including several 3 and 4-year-olds, have averaged over 700 pounds fat and 20,000 pounds milk. Forty cows average over 600 pounds fat. Fifteen heifers with first calf average 490 pounds fat (600 lbs. butter). Estimate the value of a bull in your herd that will introduce 50 per cent. of this blood in the next crop of heifers. Prices $125 and up. Have something especially fine to offer breeders of registered cattle. Write to-day for information.

Riverside Sadie De Kol Burke, 28,826 Pounds Milk One Year.

A. W. MORRIS & SONS, Woodland, Cal.

SALVADOR STOCK FARM

HEADQUARTERS FOR

SHIRES

Gold Medal awarded to Henry Wheatley by the Shire Horse Society of England for the best Shire Stallion of any age.

SPECIAL—For the next month I will sell six Shire mares in foal at prices within the reach of anyone.

Have still on hand a few prize-winning Stallions at very attractive prices.

For Particulars and Prices Address

Henry Wheatley : : : Napa, Cal.

Black Hawk Stock Ranch

For Sale—**SHIRE STALLIONS**, ranging from two years up. Also **MARES** in foal. Breeding and quality unsurpassed. Prices right and inspection invited. Correspondence given prompt attention.

Address

A. W. WARD

Burlingame, Cal.

Cocoanut Oil Cake Meal Economical For Feeders

Its Digestible Protein Richness Assures High Nutritive Value

Cocoanut Oil Cake Meal contains 16.4% Protein, practically all digestible, consequently the percentage of waste in the assimilation of this highly nutritious food is small. Because of this fact it is the most economical food to buy for Dairy Cows, Hogs and Poultry. Place your order now.

PRICES

20 TONS	10 TONS	5 TONS	LESS QUANTITY
Per Ton $25.	$25.	$25.50	$26.

f. o. b., Southern Pacific cars in 20-ton lots.

Cartage in less than car lots: 1 Ton or more, 75c per ton; Half to 1 ton 75c; Half ton, 50c; 1 or 2 sacks, 25c.

Terms: Net cash, immediate payment. Prices subject to change without notice.

When Ordering Address Dept. C-1

Free Sample Sent On Request

PACIFIC OIL & LEAD WORKS

Manufacturers

155 Townsend St., San Francisco, Cal.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM

Salt for Live Stock

By J. D. Holman

MANY farmers in California, especially those within a hundred or so miles of the Pacific ocean, claim that live stock do not need salt. As one man told me, the fogs coming in off the ocean bring in enough salt to fulfill all the requirements of the stock. However, I noticed that when I put a handful of table salt on a box his cows licked it up greedily and he only lived 12 miles from the ocean. If the system of these cows had not needed salt they never would have licked it up the way they did.

Salt is considered one of Nature's correctives and very necessary for all animals that eat grass. Hunters all know how deer will haunt "salt licks," even after being shot at. Domestic stock crave salt just as much as deer. This was forcibly brought to my attention last summer at a dairy near Soledad, Monterey county. In company with a stockman I was riding over the country, and as we drove into the yard of a Swiss dairyman we noticed a cow licking the collar of a harness that had been thrown on a wagon wheel. The stockman called the Swiss' attention to the fact and added, "That cow needs salt." The dairy man laughed and said that he had a 60-pound chunk of salt up at the spring on the hillside, and that it wasn't salt that they wanted, but on account of the dry year it was feed what they desired. A few hours later as we returned by the spring the stockman looked for the salt and found it behind a trough, where, from its appearance, it had been for several months past. Evidently the cows had dislodged the chunk from its regular position and it had rolled behind the trough, where it was impossible for the stock to reach the salt.

We told the dairyman where his salt was and subsequently when I saw the man again he volunteered the information that almost immediately after the salt had been put where the cows could lick it they improved in general appearance and their milk flow increased.

Farmers use various methods of keeping the salt for stock. Some prefer crystalized rock salt and put it in boxes, so the stock can reach it. This scheme is disadvantageous, in that a heavy dew or rain will dissolve much of the finer salt, also, there is more wasted and it gets dirtier easier. The majority of stockmen prefer the solid chunks of salt, as they are easily handled and rain or dirt does not do them any material damage. It is always best to have the salt near the watering place and then the stock can quench their thirst immediately.

Henry Miller, one of the most successful feeders of livestock in the country to-day, knows the value of salt and feeds thousands of pounds of salt every year. From years of experience in conditioning stock of all ages and descriptions, he makes it a practice to keep salt before them all the time. When he is finishing cattle or sheep for the market, instead of permitting the stock to take salt as they desire, he dissolves it in water and mixes the brine with their feed. In this way they take several ounces of salt into their systems every day. In order that every particle of feed is impregnated with the salt water, he has his men stir the mass thoroughly. The result is, the stock relish the feed much more, besides drinking large quantities of water, which has a tendency to lighten the color of the meat. Likewise, Sam Matthews or other successful feeders of beet pulp mix salt with the best pulp and cut hay. They have found that it adds to their profits.

Summer Pastures and Feed

By I. D. Graham

WITH the increased interest in live stock farming in the Coast region, and especially in California, has come the question of permanent pasture.

For certain classes of livestock, notably horses and hogs, alfalfa offers a perfect solution of this question, but for the ruminant animals, other things are needed. The wild grasses furnish excellent pasture during certain seasons of the year, but in the summer months are dry and less succulent than is needed for good results. The summer silo is coming into use as a partial solution of this problem, but greater study than ever is being devoted to a selection of grasses that will grow under the summer conditions of the great valleys and furnish the succulent pasture which is so needed by every class of farm animals for best results.

This question of feed is important and attention is being directed to the sorghums for its solution. Just recently a California stock raiser announced that he was planning to put out 160 acres of kafir, and numerous inquiries have been received in regard to feterita. It is a well known fact that kafir will yield at least one-third more grain than will Indian corn under the same conditions. It will also withstand the summer drought much better than will the corn and its feeding value is practically the same. Careful experiments made by a number of different experiment stations, and also by practical farmers and feeders, show that in feeding value ten bushels of kafir are equal to nine bushels of Indian corn, while the yield under average conditions is about forty-five bushels of kafir to thirty bushels of corn per acre, in the corn belt States.

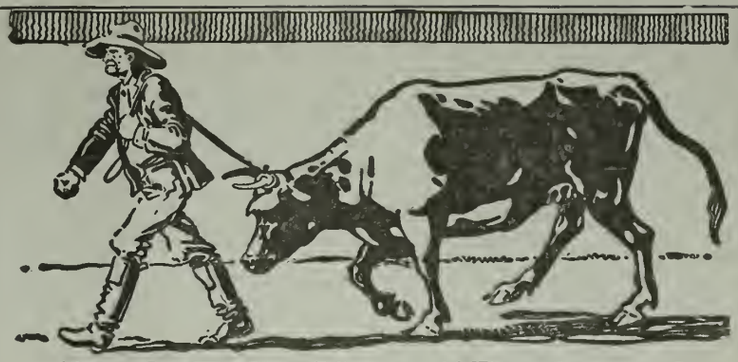
While this has not been worked out so accurately in California, as far is known, it will undoubtedly hold true under the same conditions in this State, and if so, it opens up a new field for the production of cheap feed such as is badly needed by the farmers and breeders of California. Successful livestock growing depends in a large measure upon the cheap production of suitable feed stuffs, and among these kafir takes a very high rank.

Feterita, which has been mentioned as attracting some attention, is another form of sorghum which possesses a high degree of drought resisting quality, but is lacking in other properties which characterize kafir and make it so valuable.

Feterita does not harvest well and it has a fashion of sprouting and growing second and third crops before the first crop is harvested. This makes it very difficult to handle because the grain in the field is in all kinds of condition, due to the different maturing periods of the main stem and the sprouts.

As long as kafir and milo have proved themselves so worthy and show that they do fill the place to which they are adapted, it would seem unwise to experiment with feterita.

Feeding a little linseed meal occasionally to stock is beneficial, keeping the system regulated.



Don't Take Your "Backward Cows" to Market!

There's a lot of difference between a cow's *meat value* and her *milk value.* When her milk value falls below her meat value, something is wrong—she is a sick cow—and in most cases sensible treatment will restore her to the performance of her natural functions.

Kow-Kure is strictly a medicine for sick cows. It works on the digestive and genital organs and is an absolute cure and preventive of such troubles as Abortion, Retained Afterbirth, Barrenness, Bunches, Milk Fever, Scouring, Red Water and Lost Appetite.

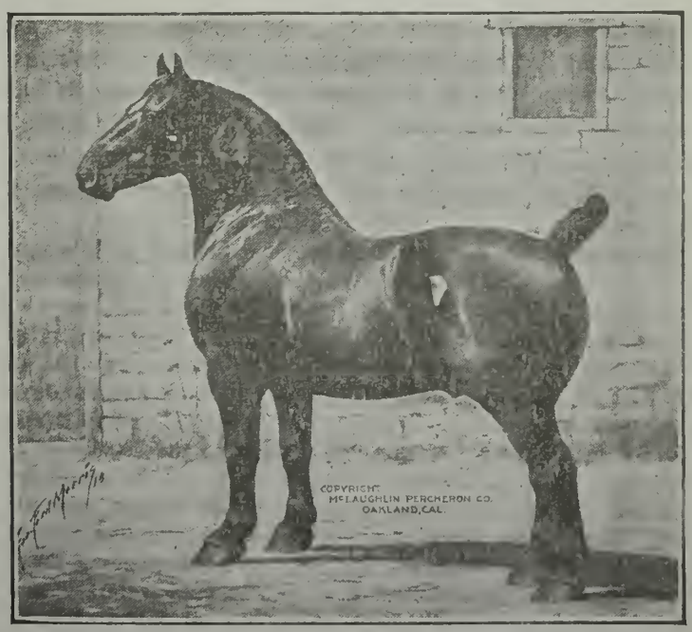
Kow-Kure has genuine medicinal properties which tone up the cow's system, making it possible for her to thrive on Nature's food. The occasional use of *Kow-Kure* according to directions will improve the health and productiveness of the whole herd.

Sold by most feed dealers and druggists in 50c and $1.00 packages. Ask your dealer for valuable free treatise, "Cow Diseases," or write us.

Dairy Association Company, Mfrs.
Lyndonville, Vt.

Distributors for Pacific Coast:
Germain Seed & Plant Co., Los Angeles, Cal.
Portland Seed Co., Portland, Oregon.
Spokane Seed Co., Spokane, Wash.

America's Leading Horse Importers
PERCHERONS



One of Our Recent Importations. Distinctly the "McLaughlin Type."

At the great INTERNATIONAL LIVESTOCK EXPOSITION, Chicago, Dec., 1913, our stallions won Two Gold Medals; Two Championship Ribbons and other honors. At the California State Fair, 1913, we won every FIRST PRIZE in every class competed for, including every CHAMPIONSHIP.

When you want the BEST, let us hear from you.

Western Stables, 47th and San Pablo Ave., Oakland, California.

McLAUGHLIN PERCHERON COMPANY

ORCHARD and FARM

ESTABLISHED 1888

IRRIGATION

VOL. 26 APRIL, 1914 NO. 4

Published Monthly at Hearst Building, San Francisco, Cal., by the Country Life Publishing Company.

SUBSCRIPTION RATES

One year, domestic postage paid ---------- $1.00
One year, Canadian postage paid ---------- $1.50

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

ON April 4 the new board of directors of the California Livestock Breeders' Association will meet to organize. These directors can develop a sound, vigorous and progressive programme for California livestock interests, or they can leave organized livestock on a haphazard, disinterested and ineffective basis, as it is now in many branches. One or the other will be done. If the former is accomplished, the State will receive great benefit; if the latter results, California will miss an opportunity that for years may not offer so well again. There is a president who is one of the livest and most successful dairymen in the country, as well as the State, and a board of directors that can get what it goes after. Their need is for a live, definite programme, a capable, aggressive secretary to carry out that programme, and for the heartiest kind of backing for the secretary when he gets to work. It's been long since the Livestock Association did have a definite, live programme and it had better get busy or quit.

We have now in California no strong, organized livestock interests. There is a Dairymen's Association, Swine Breeders' and Wool Growers' Associations, and some other organizations of restricted interests and activities, all of which meet but once or twice a year and adjourn until the next meeting, doing little else than looking after routine matters. Then the Livestock Association has largely become simply a cattlemen's association. This year it has moved in the right direction, to a slight degree, and can move all the way to be a real association of all breeders, or slide back to the cattle business alone once more.

This association can follow some such method as is suggested here to make livestock interests powerful. It can appoint one director to have special charge of some one interest—draft horses, range cattle, dairy cattle, sheep or swine—and he can gather a sub-committee of the best men in the State to develop a programme along that line of stock. Let such a committee work out a programme and the directors of the livestock association discuss it and back it up, and all the power of California livestock interests will be put to the service of every branch that needs assistance. Everything reasonable could be obtained and California livestock given the public support now almost lacking. Smaller associations of restricted interests and limited resources have neither funds nor facilities for accomplishing the work of a strong central association with a capable, paid secretary, nor can small associations secure the same recognition as a large association representing the whole livestock industry.

If anything is to be done in organization for California livestock, it has to be done now. Fine feed conditions, after a series of dry years, have given stock interests a big boost, and the great increase in purebred herds of all kinds and the great material development we are starting, all call for vigorous, systematic effort of organized livestock breeders. In less than a year, the Panama-Pacific International Exposition will open its doors, having one of the finest assemblages of purebred stock of all kinds, from all parts of the world, ever gathered together in one place. When breeders from other countries come, largely with the intent of prospecting for future sources of supply of purebred stock, and find California breeders almost totally unorganized, or their organizations moribund in such an important time, their ideas of California as a purebred stock country are going to suffer a sharp decline. For any kind of success the livest kind of a secretary has to be secured to keep the strings of all livestock interests in California centered in one bundle, and if anything like that is to happen, it has to start right away. California breeders, individually, are so live and progressive that they will rally to any effort for organized advancement.

Here are some things that can be accomplished by a live association:

Gathering and publishing authentic livestock statistics;

Securing a complete list of livestock breeders, so as to promote the sale and exchange of good stock

Getting every breeder a member of the association;

Promoting the registration of purebred animals;

Getting better classification of livestock at district and county fairs;

Assisting the State Board of Agriculture in many things connected with its work;

Having livestock matters of some kind discussed at every commercial and financial gathering;

Securing uniform livestock laws in the counties of the State, regarding estrays, impounding livestock, muzzling dogs—to prevent sheep killing— etc.;

Amending dairy laws to obtain uniformity and more sensible regulation, as was unsuccessfully attempted last Legislature;

Securing better support for State departments connected with livestock;

Having railroads, chambers of commerce, and other such publicity agents give due weight to livestock matters, now frequently ignored, to the hurt of the industry and the misfortune of State, county and homeseeker;

Getting banks to loan money on livestock, as is done elsewhere, to their own advantage and the proper development of their communities;

Securing livestock quarantine station, badly needed for the Exposition, and a help to importers for all time;

Getting a more effective enforcement and amendment, if necessary, to stallion law;

Regulating the quality of purebred stock imported for sale;

Developing better methods of marketing commercial stock—whether it be draft horses, beef cattle, sheep, swine, or what not;

Preventing adverse legislation of all kinds and securing needed legislation;

Holding an annual meeting for all stockmen at which vital subjects could be discussed and the best authorities on stock matters secured.

This list is incomplete and merely suggestive. All these things could be accomplished: few are now being attempted and none are being sought with sufficient enthusiastic effort to get good results. Organized livestock can go along in its old rut, or it can go ahead with vigor and success, according to the way the directors of the California Livestock Breeders' Association take hold of things.

Imperial Valley may appear to have a disproportionate amount of space this month, but this section of the State is so wonderful, so worthy of attention and so far-reaching in its effects upon markets of many California products that we are sure that every reader will be greatly interested. Orchard and Farm is a live paper and its columns are filled with accounts of farm practices from all over the State, so if it is Imperial county farming one time, it is Santa Clara or Tehema another, everything being treated in such a fashion as to be most interesting and instructive to everybody everywhere. All our readers will realize that the only way a farm paper can be of full value to farmers is to get out all over the farming sections, and this Orchard and Farm is doing. We are not through with Imperial county either, and will have accounts of fruit growing and other matters of vital interest to all fruit men and farmers in later issues.

Crop Conditions All Over California

—Reported by County Horticultural Commissioners—

BUTTE COUNTY, Earle Mills—The prospects of a large fruit crop are very bright indeed. The grain on the adobe which was threatened with being drowned out by excessive rains is showing up nicely on account of the last few weeks of dry weather.

COLUSA, G. R. Boedefeld—We are having a fine blooming season for all deciduous trees. Prunes and almonds are especially heavy. Seventy-five per cent of our 1914 prune crop has been sold here at prices ranging from 4 to 4¼ cents basis. The 1913 crop of citrus fruits has been shipped and the buds for this season are commencing to swell. Indications are favorable for a good season. Field crops are in good shape. The recent dry, warm weather has helped barley and wheat. Hundreds of teams are at work putting in late barley. Feed is excellent for livestock. Lambs are doing very well and we are having a very good season in all ways.

CONTRA COSTA, Frank T. Swett—Over 30 inches of rain have filled the soil with an abundance of water. Favorable weather during blooming has made prospects good for all varieties of fruits, with some exceptions. Some apricots where drought was severe last season are not blooming well. Grapes not having bloomed, it is too soon to make any predictions. Pear thrips are not plentiful in orchards that were carefully sprayed last season, but in some unsprayed orchards they are numerous. A large acreage of pears, almonds, prunes and apricots has been planted, probably as much as in three years altogether preceding. Most of the nursery stock entering and grown in the county has been clean and healthy. An infested shipment from Alabama was destroyed on account of borers.

About 1,200 carloads of celery were shipped East this past season. Potatoes are being freely planted on the tule lands. Precautions in securing clean seed are being taken to prevent spread of nematodes and tuber moth. If we have a few good showers grain and hay crops will be very large indeed this season. There is a considerable carry over of old hay held some months ago for high prices, but it is being sold at greatly reduced figures now. There is abundant feed for stock, but stockmen find it very hard to get calves or young steers; they are very scarce.

A careful and consistent search and eradication of pear blight for the past three years has practically eradicated it in this county. Every pear grower for three years has constituted himself a committee of one to notify the commissioner of any discovery of stray pear blight. The time to keep up redoubled efforts to control pear blight is when there is so little that no one is thinking about it. A few centers of infection, a spring favorable to its spread by bees and other insects, and considerable damage may result. At the present time blight is not a commercial factor in the county.

EL DORADO, J. E. Hassler—All varieties of deciduous fruits are heavily loaded with bloom and the weather thus far has been very favorable, although a little dry, and we will soon need some rain. An unusual condition prevails in our orchards this season. The warm weather has started the fruit spurs into full bloom at the same time in all fruit growing localities regardless of altitude, orchards at 4,000 feet being as far advanced as are those at 1,600 or 1,700 feet. It will be interesting to observe the coming season what difference, if any, there will be in the time of ripening of some varieties at different altitudes throughout our mountain orchards. Grain and pasture are in fine condition.

HUMBOLDT, George B. Weatherby—Many of the deciduous fruits are in full bloom. Apple buds are just nicely starting to swell and spraying with lime sulphur at winter strength for control of scab, used in conjunction with Black Leaf "40," for the control of the purple, or leaf curling aphis, is in full swing. Weather conditions are at present favorable.

KERN, K. S. Knowlton—All deciduous fruit trees that have blossomed have set for a full crop and on those not yet in blossom the buds appear to be in good condition. Citrus trees are blossoming full. Grape prospects look promising. Deciduous planting this season has amounted to 175,000 trees. Citrus planting is just starting and will be something over 30,000 trees. There will be about 300 acres of olives set out.

Peas, well filled, have been on the market for some time. Other vegetables are doing well. Present indications are for a bumper crop of grain. Livestock is in first-class condition, though there is a shortage, owing to high prices last fall.

LAKE, George A. Lyon—All varieties of fruits are well set with bloom and prospects are good for a heavy crop. The grain crop will be light, as the wet winter prevented early sowing.

MERCED, N. H. Wilson—Crops never looked better than at this time. There has been a very large acreage sown to wheat and barley this year and farmers are still sowing grain. Farmers all over the country are plowing, checking and sowing alfalfa. There will be several thousand acres of alfalfa sown this year. The tomato men already have their plants set out, which means earlier tomatoes than ever. The sweet potato men have all their hot beds made and plants are coming up better than ever before on account of the warm weather this month. Land buyers are coming in every day from the Eastern States and a great many of them are buying land and locating here.

MONTEREY, J. B. Hickman—Apricots have set very heavily. Heavy beating rains, followed by drying winds, have injured much grain in hill sections. Grain prospects in Salinas valley are extremely good. Livestock is in splendid shape, as feed is abundant.

NAPA, A. D. Butler—Prospects at present are good for all kinds of fruit, and trees are blooming heavily. Grain and hay looking well. There is plenty of feed and the stock is doing well, but as the ground is getting hard in many places, we will need rain shortly.

NEVADA, L. F. Norton—On March 1, 0.25 of an inch of rain fell. Since then until present time, March 18, the weather has been like summer. Peach, plum and cherry are in bloom and another week of such weather and pear and apple will be in bloom. The bloom is unusually heavy and an enormous crop is to be expected, unless we have a cold storm which clears up with a freeze while the blossoms are full of water. Nursery stock is still coming in at the rate of from 1,000 to 2,000 a day, Bartletts leading, two to one. About 1,000 acres will be planted to pears here this season, principally Bartletts, with Comice and De Anjou for pollenizers.

RIVERSIDE, D. D. Sharp—Prospects are for an unusually large crop if favorable conditions continue and we get no spring frost. The apricot crop is showing good and is well advanced. The citrus trees are showing a very heavy bloom, but we cannot be guided by that in judging the coming crop. We have had some warm weather lately, causing the present crop to drop heavily. Grain does not look very well in some sections, as we have had dry winds instead of rain, and the late sown grain is going to suffer. The alfalfa growers are on the lookout for good dairy cattle, but find them hard to get.

The Coachella Valley is going to specialize on Egyptian cotton and will plant about 500 acres this year, the seed having been imported from Arizona.

SACRAMENTO, F. R. M. Bloomer—The crop outlook is bright. New planting of the deciduous fruits is heavy. To March 5, nursery trees were inspected for planting in this county as follows: Bartlett pears 57,826, peaches 46,750, plums 22,140, prunes 15,850, almonds 13,600, other varieties 18,800. Citrus trees are looking well. New planting is just beginning and will exceed 50,000 new trees this spring. The grapes are looking fair, but the crop will be short, as some vineyards that were not irrigated last season will not be up to the average. The berry vines are looking well. Strawberries picking will begin soon. Vegetables are doing finely and the grain is looking better than in the last three years. On account of the good feed in the pastures the cattle is in better condition than usual and conditions as a whole look prosperous.

SAN BENITO, Leonard H. Day—The apricots and prunes will be heavy, and there is a normal setting of almonds. The wheat, barley and oats are doing finely so far, and livestock is in fine condition. Rain will be needed soon.

SAN DIEGO, H. A. Weinland—The deciduous fruits have been added to this year by the planting of 45,000 trees of various kinds, principally the apple, pear and peach. The rust is appearing in some of the grain fields and is doing considerable damage, together with the aphis, which is more plentiful than usual this year. The newly appointed farm adviser has commenced his duties in the county. The County Farm Bureau has been duly organized with 318 members, and prospects of a membership of 400 or more within the month.

SANTA CLARA, Earl L. Morris—All the crops are in good condition.

SHASTA, George A. Lamiman—All kinds of deciduous fruits have blossomed and set very heavily at the present time. The weather conditions have been ideal for pollination. Strawberries are looking well and early varieties are in bloom and setting fruit. Livestock is in fine condition.

Shipments of nursery stock are about all in and can report for the season to date (March 20) a total of about 72,000 trees and vine. Peaches and olives lead all other varieties in the planting. Most of the stock received is new planting, that is, on new land, and a large per cent goes to the Happy Valley section. A great many of the peach growers have sprayed their orchards for the peach moth and will follow up spraying on apples and pears for the codlin moth in a short time.

The creamery at Anderson is now making 4,000 pounds of butter per month. All the product is readily disposed of on the market.

SONOMA, A. R. Gallaway—Deciduous fruits are blooming well, and the weather thus far seems quite favorable for the fruit to set. There is a likelihood of a considerable loss of young fruit trees from sour sap, of which we have heard some complaint already. Citrus fruits made a fair crop, and the trees are looking well. About an average acreage has been sown for hay. The season has been too wet for much of the land, but prospects are improving now. There is a large planting of fruit trees in the county this season. We have inspected over 150,000 prune trees which have been shipped into the county, besides about as many more that were produced by local nurserymen.

TEHAMA, Chas. B. Weeks—Peaches are setting fair crops on irrigated and well cared for orchards; very light crops on poorly cared for orchards. Prunes are in full bloom, but it is a little early to say just what the set will be. Almonds are showing up fairly well, but many of the papershell varieties are setting light. Prospects for apricots are fair. Pears and apples are not blooming enough at present to report on, and grapes are not far enough advanced to report on.

Grain at the present date is looking well, but unless the present dry spell breaks soon, late winter sown grain will be short. The heavy rains through the winter and fine spring weather have caused range land to be covered with feed and with showers from now on livestock will fare better than for a number of seasons.

YOLO COUNTY, G. W. Hecke—The almonds are blooming better than they have in years, but the apricots do not show more than half a crop just now, and the prunes will have a good bloom in most orchards. All cereals are in splendid shape, but a shower is needed to start the late sown grain and alfalfa seed.

YUBA, G. W. Harney—Planting of deciduous fruits, olives and figs has been greater than any other season. Three large olive tree nurseries have been established in this county. No detrimental influences have developed so far this season, and the development of all crops is above normal as compared with five preceeding years.

The average mule will do as much work at two years as the horse will at three or four.

WINDOWS 80c EACH

8x10 8-lt. windows, glazed ---------- $ .80
2 ft. 4 in. x 4 ft. 6 in. windows, 2 lt. glazed ---------- $1.40
2 ft. 8 in. x 6 ft. 8 in.—1⅜ in. 5-panel Oregon Pine Doors ---------- $1.50
Sash Door, 2 ft. 6 in. x 6 ft. 6 in., 1⅜ Oregon Pine, like cut, glazed ---------- $2.05
Window Glass, 8x10 ---------- $ .05
Window Glass, 24x28 ---------- $ .40
Roofing, best 2-ply composition, per sq. ---------- $1.50

We Manufacture and Sell Only New Goods.

No wreckage or odds and ends. Our motto is "From Forest to Home." Our 114-page catalogue lists everything **at Bargain Prices** you need in building, including Sash, Doors, Glass, Paints, Varnishes, Hardware, Building Paper, and Roofing. Let us send it to you now before you build. Address

Contractors and Builders' Supply Co., Inc., Oakland, Cal.
Corner Fifth and Cypress Sts.

Things That Perplex the Farmer

RHODES GRASS—What is the feeding value of Rhodes grass? It is advertised as something new from South Africa. They claim that it is good grass for green feed and excellent for hay, and under favorable conditions yields five tons per acre.—SUBSCRIBER, Roseville.

Answer by Prof. John W. Gilmore, University of California:

Rhodes grass was obtained by the Seed and Plant Introduction Division of the U. S. Department of Agriculture in 1903, from the estate of Cecil Rhodes in Southern Africa, hence its name. So far as I have been able to learn this grass has not been tried in California on any commercial scale. It has been planted in two or three places in very small plots and has been found to do well, especially on strong soil where there is a sufficient water supply and where the temperature does not fall below 20 degrees F. in the winter time. This grass is remarkable, however, for its tenacity under dry conditions. Under good soil and moisture conditions it will grow from three to five feet high and become very leafy, while under arid conditions it will persist growing only three or four inches high. Under normal conditions it propagates itself by decumbent branches or runners, and is perennial where it is not killed out during the winter. It may also be propagated by seeds, and though under normal conditions it is quite persistent, yet it may be eradicated from cultivated fields by the ordinary methods of cultivation.

While, as stated above, this grass has not been grown on a large scale in any part of the country to enable us to express very accurate estimates of its yield, yet yields of three tons per acre from two cuttings have been reported from Florida on relatively poor sandy soils. On good soil of optimum fertility and moisture content, four and one-half tons have been reported. I am of the opinion, however, that under average conditions where the grass will grow, yields of not more than two to two and one-half tons per acre may be expected. Since, however, under optimum conditions the grass may be cut three times during the year, this crop seems to have considerable promise. There are no accurate data regarding its feeding value, though from my own experience cattle like it quite well and it seems to make a good quality of hay. It does not, however, stand pasturage as well as some other grasses, for close nipping will destroy it. The analyses show between 6 and 7 per cent of protein, about 2½ per cent of fat, about 42½ per cent of carbohydrates, and about 30 per cent of crude fiber, thus, it is not very much different from Timothy in its composition.

PLANS FOR ROUND BARN—In your February issue you speak of the economy of a round barn. Will you kindly have some of your subscribers that own a barn of this kind submit plans through the columns of this paper of a round barn for general use on a small farm? Take, for instance, a barn thirty feet in diameter and apportion the space so that box stalls for about three horses can be had and stalls for about six cows, besides a driveway and storage room for six months' hay for this amount of stock.—C. T. O., Klamath Falls, Ore.

We are afraid that you would not find it profitable to build such a small round barn. Apparently they give the best satisfaction only when of large diameter and capable of housing about two strings of cows and up. They also apparently are more desirable in climates where winter housing of animals is required, the idea being that the ground floor is for use of stock and the loft for storage of hay. Few are used in California or on Pacific Coast, but would be glad to have owners volunteer whatever valuable information on any that they have. Plans in detail (for large structures only) can be found in University of Illinois bulletin 143, Urbana, Ill. This bulletin states that a round barn is preferable to a 16 sided structure, as shown in illustration in February issue of Orchard and Farm; also that hip roof is far better than straight roof, as shown in illustration there.

This bulletin strongly recommends round barns for economy and convenience, although a writer in Hoard's Dairyman of February 20, 1914, condemns them just as strongly.

SIZE OF POULTRY RANCH—I am thinking of returning to Napa, Sonoma or Lake county to engage in the chicken, turkey and angora goat business. How much land shall I need for 2,000 chickens, 500 turkeys, 200 docks and several bands of goats, taking into consideration the raising of feed for them also.—G. M. A., North Yakima, Wash.

The combination you suggest is very unlikely to develop. Chickens in the numbers you name are for a small, intensive farm. Turkeys are best raised with a big range, preferably in a grain or alfalfa country; Angora goats are most at home on rough country with lots of brush, so you see you are not likely to light on a place where you could combine goats, turkeys and hens in the way you suggest. Goats and turkeys also are likely to be a side issue, not the main product of a ranch, and the number for a given acreage would depend upon circumstances. Furthermore, if you intend to keep 2,000 hens, would advise you to get a small place with rich soil and buy most of your feed, raising plenty green stuff for them, including, perhaps, alfalfa and a little grain hay to scratch in. A couple of acres of fruit would also go well with the poultry business and the proposition should be highly satisfactory.

BLACKLEG VACCINE—Last year I bought blackleg vaccine that was put up at the California State University. Can a person living in Arizona send direct to the university for it so as to know that it is fresh?—R. W. M., Kelvin, Arizona.

The veterinary department of the University of California states that it does not manufacture or distribute blackleg vaccine. Probably you secured it from the Cutter Analytic Laboratory at Berkeley. You can obtain the vaccine free in powder form from the U. S. Department of Agriculture, though the string and pill form, which is more convenient, can be secured from commercial concerns, like the one named.

While on the subject of blackleg it might be well to say that vaccination is the only reliable method of control of this disease No successful treatment is known after blackleg has shown itself, and even should a remedy be discovered, its usefulness would be limited, owing to the rapidly fatal nature of the affection. Cutting open the swellings and injecting various medicines has seldom met with success. Excessive exercise and bleeding have also been found next to useless.

Burning is preferable to any other method of disposal of the carcass of a dead animal, as it is the only means that can be relied upon to absolutely destroy all germs of the disease with which the carcass is teeming. When the victim is buried the germs will remain alive in the soil long after the carcass has decomposed, and will constitute a menace to the health of stock pastured upon the land. Earthworms are said to convey infection to the surface.

Calves should not be vaccinated unless it is known that the disease has previously occurred among animals pastured on the same land. When vaccination is practiced there is great risk of introducing the germs of the disease and thus infecting the land, which would necessitate vaccinating annually thereafter. A stock owner can much better afford to ascertain that his range is infected by waiting until a death has occurred, than to rush into vaccinating before he is certain that it is necessary Blackleg does not sweep over a region rapidly like some infectious diseases. Do not castrate or dehorn at the time of vaccination. Do not vaccinate animals already stricken with the disease.

Animals between the ages of five months and two years should be vaccinated several weeks before the disease usually appears. Animals older or younger occasionally die of the disease, but it is not profitable to vaccinate against these attacks, for they occur rarely. If animals under six months are vaccinated, the process should be repeated the following year. The operation is facilitated by confining the calves in a chute.

METHODS IN CITRUS NURSERY—Can you tell me how and when to plant lemon seeds and what kind of seed to use, and also where I could get some? Is there any special cultivation that is used? Anything else you can tell me will be appreciated.—H. C., Los Gatos.

We conjecture that you are intending to plant lemon trees in accordance with the boom that lemon planting at the edges of the Santa Clara valley is experiencing. If so, you do not want to plant lemon seeds, but orange seeds, working over the seedlings to lemons. Even better would be to buy the lemon trees all ready for planting and so get just what you want. If you are inexperienced in nursery methods and have no trees of definite improved type you may be rather unfortunate in raising your own trees.

For almost all citrus varieties orange stock is used, mostly sour stock from Florida, though in lighter, well drained soil, seed from California seedling oranges may be used. The California seed has to be kept moist until planting. Florida seed may become dry without injury. You can get same by ordering from any leading California seedsman. You can also buy at a moderate price seedling trees and in due time work them over yourself.

Good, plump seeds are sown in spring (or at any time if indoors) in shallow boxes filled with rich, light loam. They should be covered about a foot and above the surface, with light cloth to keep off the frost and strong sunshine. The seeds are to be covered about an inch deep and the soil kept moist, being given a light irrigation about every two or three days. They should be planted about an inch and a half apart. The boxes may be located in a lath house for the first season. You can also plant the seeds directly in open ground, but must give them good care.

Year old seedlings are transported to nursery row after ground is warmed in spring. Usually they are set farther apart than deciduous trees and require rich soil with good moisture supplies. The best of care is required for satisfactory results. Protection from severe cold is needed in winter. The trees are ready for budding a year after setting out in nursery if growth has been heavy, or very often, two years after, and require another couple of years as a rule before they are ready to transplant to orchard, so there is a long wait from the seed.

In view of the great influence bud selection has on the young tree, the only buds used should be from heavy producers of the finest kind of fruit. This is so with oranges as well as lemons, and deciduous as well as citrus fruits, although it has best been proved on lemons and other citrus varieties. We need not remark that in order to make a success with lemons plenty of irrigation water has to be available and very moderate winter temperatures only can be endured.

ALFALFA IN YOUNG ORCHARD—I have planted a young orchard of mixed fruits and wish to plant alfalfa between the rows. I will have to use city water and intend to irrigate with a butterfly sprinkler. Now some of my neighbors tell me that the spray from the sprinkler will kill my young trees. They tell me they will do well for two or three years and then die, so I am in a quandry what to do and appeal to you for help. Will you kindly reply right away, as I wish to lay my pipe for irrigating, if this will not injure my trees.—W. H. M., Nevada City.

The idea of growing alfalfa in a young orchard is excellent, but the method of irrigating spoken of is not to be advised, for the spray coming in contact with the foliage may do lots of damage in hot summer weather, for strong sunshine and water don't go well together on soft green leaves. It is possible, however, that you could get perfectly satisfactory results if you could limit your irrigating to late afternoon or early evening, so that the leaves would have full opportunity to dry off by morning. If you can do that, we believe the system would work out nicely. Generally speaking, however, we would advise another system of irrigation.

Alfalfa, we believe, is a fine thing for a young orchard, save only under a few circumstances, or with a few varieties of trees. The prime necessity is to have moisture enough for both, for in case of a shortage it will be the trees that will be hurt. Secondary in importance is good drainage, for if there is hardpan, or the soil is of such a quality that the trees will get an overdose of water there will be trouble, but if you have an open soil and good drainage and enough water for both trees and alfalfa, the latter is highly to be recommended the first few years, as it will open up the ground and provide lots of plant food and humus several feet lower than you could ever get manure. For that matter, alfalfa in a mature orchard is highly to be recommended in many cases, though not all. We can give some particulars if requested and also ask for experiences of readers that might throw new light on the matter.

POSSIBILITIES OF BERRY DRYING—I am looking into the business of drying berries for the market and should feel very much obliged if you could refer me to where I could get information respecting the most approved type of small commercial evaporator now in use.—H. M. G., Santa Cruz.

We referred this question to M. J. Moniz, Barlow Ranch, Sebastopol.

He states: "We use a common evaporator for doing part of the work, and as to the outlook for evaporated berries, it is not always good, as some seasons it is impossible to dry any, especially when there is plenty of other dried fruit on the market, and besides, it is a very particular process to engage in, as one has to be very careful to put up a good article."

In view of this, would think that the evaporators in the Pajaro Valley could provide material for investigation in case you wish to continue a study on this matter. Although there are some favorable reports on dried berry prices from the northwest, San Francisco dealers state that the demand s next to nothing and prices the same. There is no doubt, however, but what if a market could be opened and a fine product manufactured, it would promote the berry business greatly.

A Standard of Orange Excellence

—By D. Whitney, Editor—

THE National Orange Show was held and was a great success. It was doubtless of great value in suggesting a higher standard of quality. Anyway, one of the greatest reasons for such a show should be to indicate what kind of fruit should be produced, if possible; also giving a few suggestions as to the right methods of production.

The writer, therefore, wished to find where the prize oranges were grown, so as to find out how orange growing should be conducted, and found that they came from every part of the district which won the blue ribbon and that no special grove, no special tree, could be given credit for high quality production, as far as the show was concerned. Without question it would be much more valuable if at least some of the prizes could be awarded for fruit of single trees, single groves or single packing houses, perhaps three sets of prizes being given to take in all of these points.

There is no question but what high prices, good profits and the prosperity of the whole industry depends very largely upon turning out as high a standard of fruit as possible in color, shape, size, texture and edibility. The standard of judging fixed by the show management is excellent in determining what an orange should be, and for the purpose of giving definite help in approaching this standard the following few points upon the reasons for fruit excellence can be given.

Fundamental is the character of the tree. The work of A. D. Shamel has shown clearly with oranges the wide difference in quality of fruit from different trees. The fact, however, has always been known in a general way by all successful horticulturists, whether engaged in citrus culture or other kinds of fruit growing. The habits of growth of an orange tree, particularly the navel, will indicate largely the probable quality of the fruit, and careful observation of the fruit itself will show more. It is essential, therefore, for the greatest success to get trees of the highest type, to select buds from such trees and to prune to keep the type true.

Weakness Makes Excellence

It is a fundamental fact in plant production that weakness in the tree or plant tends toward fine texture and high quality in the fruit. The rule is not universal by any means, as the best orchard is normally the one where the trees do best, and tree vigor should be the aim always. Nevertheless, the point is good. For example, if you want a rough, overgrown, worthless orange, grow it on a vigorous young sucker. Practically the same result can be secured on a vigorous young tree with so little fruit that tree growth overbalances fruit production. Or have a small crop on old trees and fertilize heavily with stable manure and nitrates and the fruit will be of poor quality.

The injury to quality from surplus wood vigor stands out everywhere. It is particularly marked even in the tendency of a plant to produce fruit or seed—in other words, to save its life by reproducing itself, though it dies in the attempt. For illustration, everyone knows that an excessively vigorous grower is less likely to set fruit than a tree with good, normal growth, and that fruit can often be made to set on such trees by weakening them, though it will set in no other way. Likewise, even with wild plants, it is extremely common to see an attempt to produce far above the normal amount of seed as the life of the plant draws toward a close.

Now the very interesting fact results from the two above rules that heavy fruit production is the very thing that is needed to get quality oftentimes. The grower can play both ends against the middle and walk off with the spoils. In other words, he does best when he makes his tree as vigorous as possible in one way, but sends that vigor into fruit production, so that the tree itself don't get that vigor in great amount, but the fruit does. Thus it is a noted fact that the better fruit producer a tree is, especially an orange tree, the more likely the fruit is to be of high quality. Of course, this does not hold good if there is so much fruit that the tree cannot do justice to it.

This rule holds so good that short crops in citrus districts are often recognized as being coarse quality crops, and A. D. Shamel, who investigated citrus types thoroughly, gives as one of the leading features of citrus quality the fact that the finest quality of citrus fruit is nearly always accompanied by heavy production. Where one is, the other is also.

The fact of quality and lessened tree vigor is queerly illustrated this year. The quality of fruit generally is recognized as being quite a bit above standard. Authorities attribute it very largely to the setback given by the frost of a year ago. Dovetailing into this observation is the other closely related one that trees weakened just a little by the freeze, but not severely injured, seemed to set above the normal amount of fruit.

Sickness and Blue Ribbons.

This little dissertation is not meant to be complete, but a little incident connected with the first orange show ever held in Los Angeles will do to close with nicely and help to summarize a leading point in high fruit quality. William Wood, now horticultural commissioner of Los Angeles county, helped to get up some of the exhibits. He and another gentleman gathered four boxes of oranges from a tree that was on the down grade and apparently due to die in a year or so. That four boxes took first prize for seedling oranges. Their color was a little weak, but otherwise they were nearly perfect. Mr. Wood attributes their fine quality to the weakness of the tree. Similarly, you will often find the finest fruit on the poorest soil, but nobody wants the poorest soil to establish a profitable citrus grove in.

Now if any reader is foolish enough to consider the points developed here as absolutely governing fruit production, he can shoot holes all through the statements, but taking them as they stand, and giving due weight to many other important horticultural rules, he will find that the above ideas are generally accepted by men who know.

Next month "Orchard and Farm" will probably be able to have another short article on quality in citrus culture.

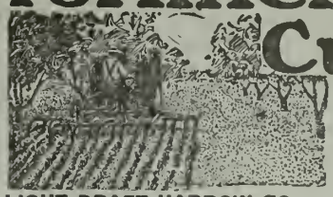
Late Planting of Trees

Some persons hesitate about planting fruit trees late in the season for fear that they will not grow. As a matter of fact, in most places in California, it is possible to plant fruit trees up to the middle of April and get practically as good a stand and as vigorous trees as if the planting were done earlier. Deciduous trees may have started to leaf out, but will not be injured for planting provided proper methods of cutting back, irrigating and protection from sun, are followed.

Plant the home grounds so as to hide all ugly things in the landscape, at the same time being careful not to hide anything that is beautiful.

No farmer has to pay excessive prices for nitrogen. There is plenty of it in the air and science teaches how to use it by leguminous crops.

Forkner Orchard Cultivator

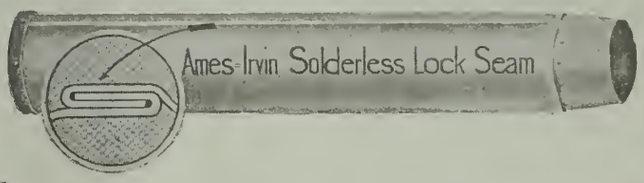


Does more work with less draft and leaves a better surface mulch than any other cultivator made.

It Works Right Up To Your Trees

Cultivating the entire surface beneath low branches without disturbing boughs or fruit. Write for catalogue and free book "Modern Orchard Tillage."

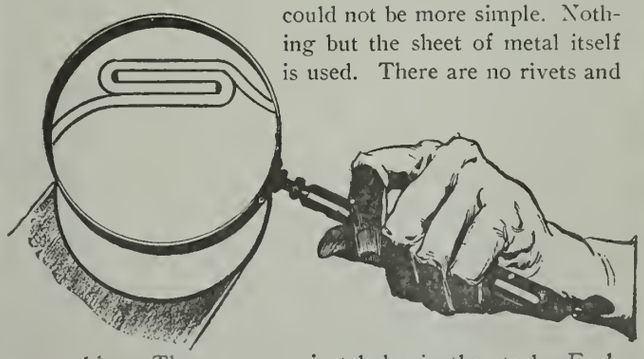
LIGHT DRAFT HARROW CO., 603 **Nevada Street, Marshalltown, Iowa**



No Solder---No Rivets

The seam is the point where trouble is most likely to occur in irrigation pipe—where the two edges of the sheet of steel are brought together and fastened. Therefore the method by which the edges of the metal are united decides whether the pipe is good or bad.

As in any mechanical product, simple construction is *necessary* in irrigation pipe. Simplicity means strength. Ames-Irvin Lock-Seam Irrigation Pipe construction could not be more simple. Nothing but the sheet of metal itself is used. There are no rivets and



no solder. There are no rivet holes in the steel. Each sheet is edged, locked together and then set down under 3,500 pounds pressure. Special machinery does the work. When finished, the seam is solid, simple and strong. The union of metal is complete—without the use of other materials.

Ames-Irvin Lock-Seam Pipe won first prizes against all competitors at the Sacramento State Fair in 1913 and at Fresno and San Jose County Fairs in 1912.

And It Costs No More Than Other Pipes

Send for our booklet *O F.* Find out all you can about pipe before you buy. Learn the various methods of construction. Your judgment will tell you which will stand the roughest handling. Send for it to-day.

Ames-Irvin Company

8th and Irwin Streets

San Francisco **California**

Shall We Grow Trees From Cuttings?

WHILE planting a lot of prune trees on peach root, I found a number with defective union of scion and stock, and, no doubt, many were planted which were also defective, though not noticeable. At this time I read an article by Ernest Braunton on roses, in which he stated that "one thing is certain—all the ingenuity of man, be he ever so careful with each and every example—can never induce a growth between stock and scion that will give as free and unretarded circulation as exists in the seedling or raised-from-a cutting plant."

Now, why could we not have better orchard trees by planting trees grown from cuttings of the desired variety of fruit, care being exercised, of course, to plant the orchard only in the soil suited to the fruit planted. In other words, select the fruit most suitable to soil to be planted and grow the trees from cuttings. I would like to see this problem discussed.

Grapes, figs, olives and small fruits are generally grown on their own roots.—A. E. Bernhard, Delano.

The author in the quotation you give was talking from theory, and theory is not good and does lots of harm when it conflicts with fact. The only way to do is to plant trees on the roots that have proved the best and forget about the theory of whether or not trees should do better on their own than other roots. The experience of many years has shown nurserymen pretty clearly just what varieties combine best with other varieties, especially for different soils. There is no doubt, however, but what there is a great deal to learn on this matter, and the best horticultural scientists are giving more attention to stocks than ever before in history. Some of the facts already discovered have, you will have noticed, been discussed in our March issue in "Pointers on Tree Planting."

Now for the theory in favor of budding and grafting, as opposed to growing from cuttings. Admitting some hindrance to sap flow or otherwise at the point of union between stock and scion, there is also an opportunity to combine a much more vigorous root system than the fruiting variety would have alone, with the fruiting ability of the top. The Salway peach, for example, is a wonderfully vigorous grower, therefore it is reasonable to expect that a Salway root and a Muir top would make a better tree than a Muir root and Muir top, the Muir being a rather delicate grower, and so with other things. Furthermore, fruit stocks are largely of the wild type, and hence have a much greater vitality and resistance to disease than the highly refined and delicate fruiting varieties. Therefore it is reasonable to believe it an advantage in theory to combine wild vigor with fruit production by budding and grafting. This theory looks stronger than the theory of cuttings, and practice proves it so.

The possibilities of adapting the varieties of soil conditions is an advantage entirely in addition to the plan of growing a varety on its own roots.

Likewise, the "retarded circulation" referred to may be a big advantage, not an injury. Pears on quince, for example, make a dwarf tree through "retarded circulation" perhaps, yet the combination is highly favored in Europe on account of the large size and fine quality of the fruit, though not advisable generally in California. It is a well-known fact that a check on growth of trees, and annual crops like tomatoes, is a stimulation to fruit production, hence the "retarded circulation" of itself, in theory, might be more of an advantage than a disadvantage.

It is a fact that not only in budding and grafting, the recognized way of raising most trees, but it would be used frequently on many plants if it were not that it resulted in a little greater trouble and expense. This is true with most of the plants you name.

For example, olives, you say, are grown from cuttings. The reason is that that is the easiest way to do, yet it is a recognized fact that olive seedlings of certain kinds worked over make finer trees than do cuttings, and quite frequently olive seedlings are grown simply to work over later. The Plant Introduction Garden at Chico has one olive variety which they favor highly and solely for its possibility as a stock for standard varieties.

It is strongly felt by many fig authorities also that it would be far better to grow Smyrna figs and, perhaps, Adriatics, on Black Mission roots than on their own roots, and this has been done. Propagation by cuttings is used not for excellence, but for convenience and economy, so called. Grapes, you probably know, are grown very largely on American roots rather than from simple cuttings. This is done to resist phylloxera, but the vine is excellent as well.

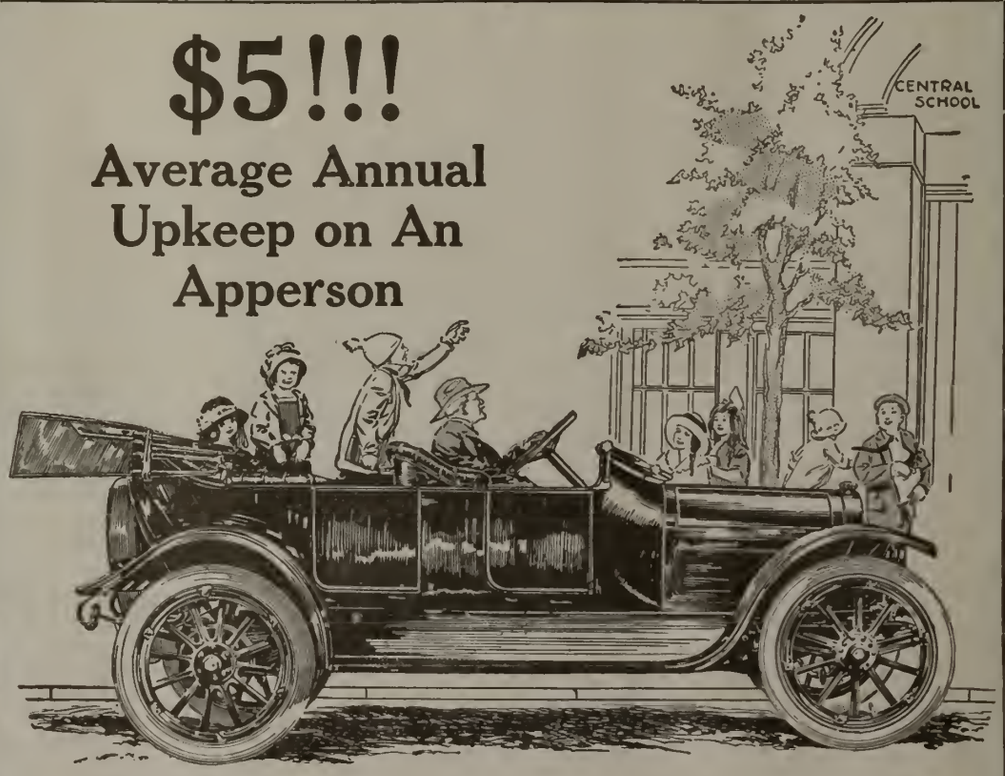
In regard to the case of your prunes on peach root, possibly the union only looks bad and as the trees grow they will be as strong and vigorous as ever. Without seeing the trees we cannot say, K. S. Knowlton, your county horticultural commissioner, would look at them for you and give you expert advice.

This whole matter of root and scion is of the utmost interest and importance and is coming in for renewed investigation now. The more light that our experienced readers can put on it the better, and any help that we can be or obtain for readers who want information on the matter will be well given.

The colt that is put in harness for the first time will pretty certainly have sore shoulders unless great care is taken. Hitch it with a steady mate and don't get the animal too much warmed up. A horse that's toughened to its work gradually and made to draw steadily stands the best chance of avoiding sore shoulders.

$5!!!

Average Annual Upkeep on An Apperson



THINK of it! The average annual upkeep on an Apperson Automobile only $5! Our total business in parts last year, on 17,000 cars, our output for the last 15 years, was $95,000. That brings the average about $5.00 a car.

And a big percentage of these efficient and **more than economical cars** are owned by progressive farmers in every section of the country.

You don't have to worry about heavy maintenance and repair costs when your choice is the efficient, always-in-service—

Famous Apperson "Jack Rabbit"

"The Wizard of the Hills"

Economical upkeep is only one feature. When we make an Apperson, we build **enduring efficiency** into its very vitals. Elmer and Edgar Apperson built the first automobile. They are still building America's first and best cars.

Write at once for De Luxe Catalog and full information about Apperson "$5-a-Year-Upkeep" and other facts. We will prove why we can profitably produce our new Four Forty-Five at $1,785, our Light Four Forty-Five at $1,600, our Six Forty-Five Fifty-Eight at $2,200.

Apperson Bros. Automobile Co., 305 Main St., Kokomo, Ind.

APPERSON DISTRIBUTORS IN CALIFORNIA

Los Angeles, The Leon T. Shettler Co.

San Francisco, Myers Motor Car Co.

41A

Ways of Fighting Gophers

By Ernest A. Marris, Sebastopol.

THIS animal has done more damage this last year in California than can be estimated in dollars and cents. Early this winter in doctoring a number of eight-year-old apple trees for a neighbor I found numbers with roots two inches in diameter eaten off. I found a nest of dried grass under the crown of one tree where three large roots had been cut away for a space of six inches. Worst of all, three twenty-year-old trees blew down, and on examination were all found to have every root but one cut off.

One orchard company I know of lost 500 young fruit trees this winter. Who can estimate the value of these trees? In a four-acre potato field in one day thirty-five hills of potatoes vanished completely. Investigating, I found the runways full of the tops, cut up into two and three-inch pieces. Continuing further, I found two five-gallon buckets full of good sized potatoes in a storeroom, and so I can add more instances and the tale is never told.

But in order to fight this pest, we must know something of its life history and habits, and quote from Stevens' "California Animals": .

"The gophers pass back and forth several times a day over the newer part of the main run. In some seasons they make a nest of dry grass, but in the warmer part of the year they apparently use none, but lie down wherever they happen to be. They are more or less active at all hours, but much less earth is thrown out during the hours of bright sunshine. It is not known whether they have more than one litter a year or not, but it is probable they do. Two to six constitute a litter. It is seldom that more than one gopher inhabits a run. At times a pair may be found inhabiting a run, but not often. The young shift for themselves before they are half grown. No doubt the young commence work from the nest and gradually drift apart. The food is principally roots and succulent stems of plants, such as garden vegetables, generally potatoes, alfalfa, etc., as well as very many species of wild plants."

Supplementing the above from my own observations, I will add: The gopher travels on top of the ground during the night. They store up food for winter in chambers, often carrying it long distances. Before a heavy winter they are unusually active, but put their storerooms on a side hill as far as possible with the runway down and out, to act as a drain, the upper one being closed, except on fine days. At mating times they are in the same runs and until the young are partly grown, when the male gopher leaves the family run. The large majority of the litters come in early spring, consequently all trapping and poisoning should be done before that time for the best results. During late fall and early winter I have often caught two gophers in the same runway at the same time. I have found after poisoning the inhabitants of a runway that after an interval of about two weeks, another set takes possession, but on getting rid of these a third lot never comes.

The partly grown gophers usually honeycomb the ground, pushing but little dirt on top, making it very hard to trap or poison. Almost invariably whenever you find an extra large mound of dirt it means a storeroom or sleeping chamber close by.

Do not let a gopher bite you; it makes a ghastly wound.

Now, it is not enough to get rid of these pests only on our cultivated field and fruit lands; we must go on to the waste lands round the edges, the wooded lands and the pastures. Begin now, make the regular rounds, working rod by rod and make sure as you go; by taking regular times soon you will only have to watch the outer bounds, and the clean-up circle will widen all the time. Out of the many ways of killing off the gopher, the surest and best are traps or poison.

In trapping use the smallest trap you can obtain, set it as fine as possible so it will spring easily. Then open the run so that you can put the trap up in it at least its own height. If the run goes both ways, put two traps to make sure. Now close up the holes with grass or sod so that just a little light can penetrate. If you leave the hole open the animal begins far back to push up dirt to close the hole and will often spring the trap without being caught. A little light and he only pushes a small amount of dirt and you will usually catch him. If you find an open hole, work it the same way. Be sure and fasten wires and stakes on your traps or you will lose many of them.

In poisoning I have found powdered strychnine the best. There are, however, many patent gopher poisons and some are fairly good in late winter and early spring.

There is, however, one important difference. Any poison with arsenic in it brings the poisoned animal to the surface hunting water, where it dies, leaving a poisoned animal to kill cats, dogs, etc. Strychnine, on the contrary, acts on the animal so that it is unable to reach the surface.

In poisoning I proceed as follows, using these articles: A bottle of freshly powdered strychnine, a sharp, round-pointed shovel, a fairly stiff curved piece of wood 18 inches long, pointed at one end (an apple twig is good), a tin box, similar to a pound tobacco box with cover. Bait: raisins, prunes or apples and carrots cut up to about the size of a walnut. On finding the gopher sign open up the runaway; take a bait and, cutting a slit in it, insert as much poison as will go on the point of your knife, squeeze the cut together and putting it on the end of the curved twig, push it up the run as far as you can; shake or rub it off and cover up the hole, smoothing it down with the back of the shovel. This is done to show you if the gopher is dead; as if not the ground will be pushed out again.

This method, if followed out systematically, will never fail to keep your land almost entirely free from gophers. Besides, it is quicker, cheaper and handier in every way than carrying around a lot of traps.

Some use bisulphide of carbon, which is placed on a rag and dropped into the hole. This chemical on exposure to the air makes a very poisonous gas, heavier than the atmosphere, which is supposed to sink and suffocate the gophers.

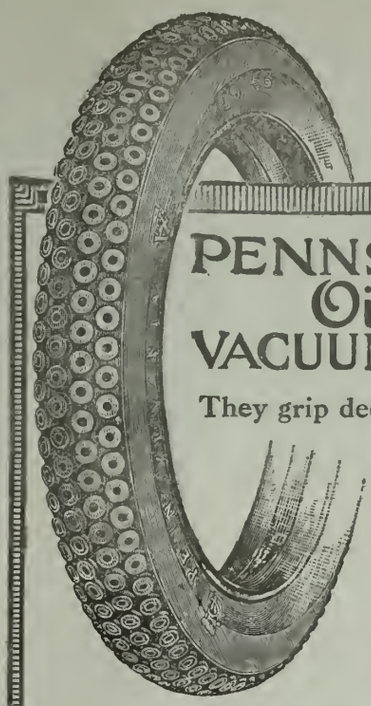
There are also a number of patented machines for forcing poisonous fumes through the runways; but for myself I find poison, traps or both, very effective.

"Eternal vigilance is the price of safety" applies with special emphasis in the case of the gopher. This added to co-operation among neighbors is the only logical and successful way to conquer the pest.

Gerald: No, your hunting license does not allow you to shoot craps. This game also must be protected. With a Kansas hunting license, the only things you can shoot are tin birds in the rifle gallery.

"I'm sorry to hear your mule died," I said to Happy Sam.

"Oh, it's all right, boss," he returned resignedly. "I ain't got no kick comin'."—Lippincott's.



This tread of heavy Vacuum Cups means service and safety

PENNSYLVANIA Oilproof VACUUM CUP TIRES

They grip deeper and hold better in soft roads than any other design of tread.

They often wear several thousand miles before the extra heavy tire beneath is reached.

When you are in town, you are guaranteed against skidding should the pavements be wet and slippery.

Vacuum Cup Tires are the best equipment for country service. They are the heaviest tires per rated sizes made and the strongest. They are absolutely proof against the destructive effects of oil.

Guaranteed for 4,500 actual miles. Records covering many years show a far greater average service.

Dependable dealers everywhere or write for nearest address

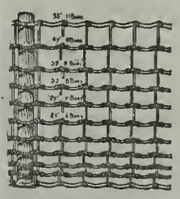
PENNSYLVANIA RUBBER CO.

JEANNETTE, PENNSYLVANIA

Pittsburgh Detroit St. Paul Minneapolis Cleveland Chicago Omaha Seattle Kansas City Dallas Boston New York Atlanta San Francisco

NON SKID TRADE MARK REG. U.S. PAT. OFF.

An Independent Company with an Independent selling policy



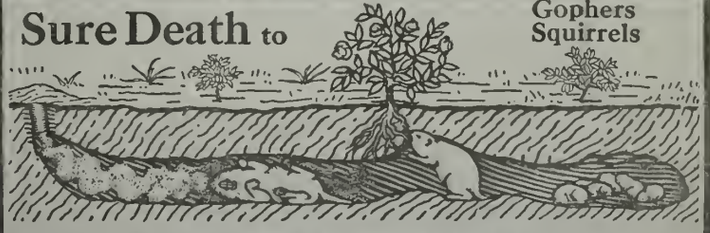
KOKOMO STEEL WIRE FENCE

Either square of diamond mesh, FOR POULTRY, HOG OR STOCK USE. Many styles to select from. Satisfaction guaranteed. Send for Catalogue with net factory prices.

California Anchor Fence Co.

Market and Aurora Streets - - - - - Stockton, Cal.

Sure Death to Gophers Squirrels



NEWTON'S GOPHER AND SQUIRREL KILLER No. 6

Exterminates Gophers, Squirrels, or any vermin in holes or caves where the poisonous gases can be confined.

GETS THEM EVERY TIME—It produces 4,000 cubic feet of carbon-bisulphide gas, which is sure death to any animal forced to breathe it. It burns without disturbing the ground, and the poisonous gas penetrates to every part of the burrow. It can also be used for fumigating.

ABSOLUTELY SAFE TO HANDLE—Anyone can hold the cartridge without the slightest danger of being injured. It is the most inexpensive, the most effective, the surest, safest and easiest.

$5 per gross. Sent by Express Collect.

NEWTON'S CALIFORNIA FIREWORKS CO.

249 Front Street, San Francisco, Cal.

Breaking the Ground.

Plowing and Harrowing.

The First Cutting.

West Sacramento
Few-Acre Farms

West Sacramento stands before the agricultural world as the master achievement of California; 11,500 acres of the richest soil in the world have been added to the cultivatable lands of the Golden State.

The reclaiming of this vast area is the greatest achievement of its kind in America to-day. A dominion of few-acre farms has been created out of what was once a vast expanse of sediment silt loam covered with wild river bottom growth.

It has taken several millions of dollars to acquire and develop this property; an army of men with latest improved machinery have worked constantly for months to make West Sacramento possible.

The initial work is done; the improvements are nearing completion and already hundreds of acres are producing their first crops for the initial purchasers.

The soil at West Sacramento is shown by chemical analysis to rival in fertility the river bottom farms of the Netherlands of Europe and the Nile of Egypt.

No soil in the world is better adapted to intensive farming than that at West Sacramento.

For the man who works in Sacramento the one-acre tracts are ideal; he can have his own fruit, berries, vegetables and poultry with sufficient ground to give his home an exclusiveness.

For the man who wants to make farming his life's work, there is no better opportunity in America than a 10 or 20 acre farm in West Sacramento.

WeWish t

A Great, Free Edu
of Power F

AT WEST S

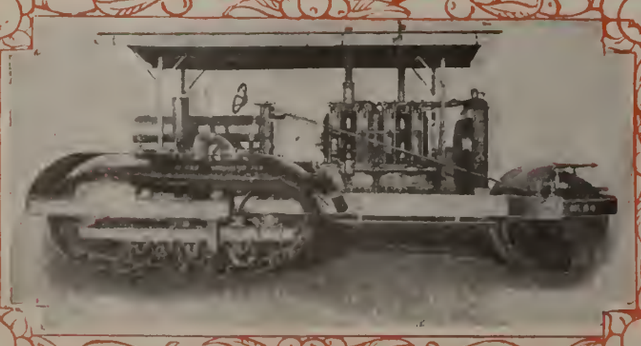
Just Across the River

On Thursday, Friday and

SPECIAL EXCURSION

From present indications this will be the largest gath of farmers and those interested in the new power far machines ever brought together in the State of Califo Every person who reads this announcement is invit

EVERY MANUFACTURER OF POW



Stacking Alfalfa.

Cabbage Without Irrigation.

Beans Without Cultivation.

Announce

onal Demonstration
ng Machines

CRAMENTO

the City of Sacramento

rday, May 7th, 8th and 9th

ES ON ALL RAILROADS

tend. Arrangements have been made to take care of veral thousand people. West Sacramento was chosen cause of its close-in location to a large city and because the superiority of its soil for demonstration purposes.

RM MACHINES WILL PARTICIPATE

Where West Sacramento Is Different

West Sacramento is in Yolo County and covers an area of 11,500 acres—just across the Sacramento River from the Capital of California.

This property is now six to fifteen minutes from the heart of Sacramento via the M street steel bridge, which was constructed to give quick access to the city.

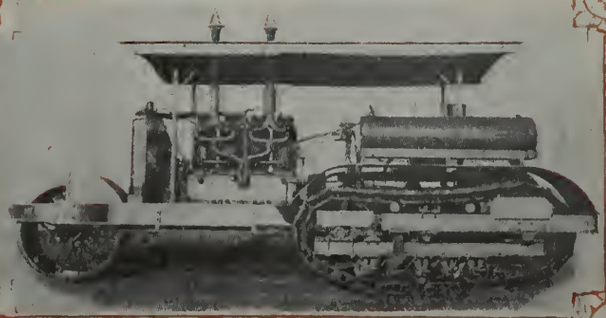
Four electric interurban railroads and the street cars of Sacramento cross the M street bridge and give rapid transportation to and from Sacramento. One of these lines has been in operation for several months, and goes as far west as the City of Woodland; another now connects Sacramento with Oakland and San Francisco; the third will soon be completed through to Vallejo and the fourth is under construction. Street cars are running into West Sacramento with a 5-cent fare.

These roads are certainties—not promises; they are now giving West Sacramento Few-Acre Farms better transportation than you find in many large cities.

Fifty miles of macadamized roads and twenty miles of reinforced concrete boulevards, now building, intersect the property in every direction. A magnificent lake, nearly four miles long, made beautiful by weeping willows that skirt its borders, lies in the center of West Sacramento.

Adjoining the lake a public park covering 250 acres will enhance the value of the property and add to the beauty of the landscape.

These unique features do their share to make West Sacramento different than any farming community in America.



The most successful market gardener today

is the farmer who invariably runs his garden on the "intensive-plan."

No farmer can be said to raise cabbage on the intensive-plan unless he uses a real "intensive-fertilizer." And a real "intensive-fertilizer" is merely a fertilizer that is ALL FERTILIZER—without filler—without 30% to 40% waste.

Nitrate of Soda

is Nitrate—*all* Nitrate. It's fertilizer that's *all* fertilizer. Because it's *100% active* and immediately available.

Our "cousin European farmers" get phenomenal results by buying materials "straight" and mixing them into balanced fertilizers. *You* can do the same. And save money.

May we send you "Market Gardening with Nitrate?" It's an "eye-opener" to every market gardener.

DR. WM. S. MYERS
Director Chilean Nitrate Propaganda
25 Madison Ave. New York
NO BRANCH OFFICES

1914 SPECIALTIES For the FLOWER and VEGETABLE GARDEN

GIANT PERFECTION WINTER STOCK QUEEN TOMATO

and many other splendid specialties are shown in our 1914

Complete Catalogue

Handsomely illustrated—much new information for the grower.

MAILED POSTPAID FOR THE ASKING

Please mark letter Dept. L.

Germain Established 1871 SEED & PLANT CO.
326-328-330 SO. MAIN ST.
LOS ANGELES, CALIFORNIA

GOPHER DEATH TRADE MARK

Kills Prairie Dogs and Gophers of all kinds. Endorsed by State Experimental Stations. 1400 tablets prepaid for $1.25. Warranted. Raticide Tablets 25c. Ask druggist or send direct. Booklet Free. F. D. Chemical Co., Ft. Dodge, Ia.

City Youth and the Farm

THE fact that the desire for farm life is many times stronger in city bred boys than it was a number of years ago, and that people have begun to realize that there are better opportunities for real living in the country than in the city, is coming up from all sides. One city boy asks us for advice, and writes:

"I am a city boy preparing to be a farmer. I expect to enter the University of California next year. Please advise me which branch of agriculture you would recommend for me to take up."

Doubtless many others, boys and grown folks, are thinking just the same thing, and in the great rush for California lands the answer sent to him will be interesting to other prospective farmers. Here it is:

The branch of agriculture that a person had better take up depends very largely upon his tastes, and we do not believe that it would be possible to tell anyone just what he should go into. All kinds of agriculture are profitable for the right people. The best kind of development for California is to have all branches of agriculture developed uniformly, and one man will succeed best in one thing, while another will succeed best in another. You can tell best where your tastes lie after you have gotten well into your college course, or, better still, after you have had considerable farm experience.

Generally speaking, we believe the different kinds of agriculture in California can be sized up about as follows: Fruit can be made to give large acre profits for the right man, but fruit is more or less of a gamble, both as to the size of the crop and especially as to the prices after the crop is ready. One year there will be big profits, and another year the prices, in spite of all that the individual can do, may fall down badly. The man who knows his business thoroughly, however, and produces the best goods, also having good business sense, is sure in the long run to have good success. There is probably a greater margin between the real live fruit grower and the average fruit grower than between the average and the best in any other line of work, which makes the opportunity pleasant for the ambitious young man with a taste for fruit culture. Fruit growing in many respects gives also a very agreeable kind of life and work. The fruit markets will continue to improve as the growers' organizations get control of the marketing agencies.

Stock, on the other hand, is very much less of a gamble for the man who plays the game right than fruit, and is safe and quite sure to give a good man a good average income. Dairying and hog raising are, however, about the only kinds of stock raising that the man with small capital can get into, and they both give the opportunity of making high acreage profit, though dairying means hard work and long hours for 365 days in the year. It goes without saying that the best dairyman can make far above average profits from dairying, as is the case with other kinds of agriculture.

Poultry raising is responsible for more failures, perhaps, than any other branch of agriculture, owing to the great number of persons entering it from city life without experience or knowledge of the business. At the same time, the right man can make a fine thing from it. There is a wide margin between returns of the successful man and the average poultryman.

In certain respects the ideal farm is to have a few head of cattle, some fruit, garden truck and poultry, though would not advise a person to try that sort of thing at the start. Apparently it takes a good man to make a success of it, or a very good location for a farm. As was said at the start, wait for experience to find just where your tastes lie, and then go at the thing you are best fitted for.

Coming from the city, as you do, we believe that you should spend all the time possible in the country, and possibly work a full year there to get actual farm experience, for by so doing you will find that you will learn much more at college than you will without such experience. Without farm experience a young man just out of the agriculture college will be green as a raw farm hand and as worthless. Not until he has had a year's experience in actual farm work will his education make him of more than average value. Then, if he is right, his study should do him lots of good.

So get your farm experience before or during your college career if possible, and after it otherwise, before deciding where you go and what kind of farming you will do; then decide as experience leads, and good luck be with you!

Plenty Nitrate Left.

All idea that the world's supply of Chile saltpeter, or raw nitrate of soda, is in danger of becoming exhausted within a century or so is overcome with the knowledge of the actual amount of this material in the Chile niter beds. There are probably, in round numbers, one billion tons of nitrate in the deposits of Chile, and, without doubt, large supplies also exist on lands now but incompletely prospected. The surveyed and certified tonnage opened up at the present time ready for extracting is fully 250,000,000,000 tons

The probable life of the surveyed deposits is upwards of 200 years, even allowing for a steadily increasing annual rate of consumption.

Moreover, there remains the interesting question as to whether by the end of the ensuing century we may not find that nature shall have by that time manufactured an immense additional amount of Chilean nitrate for the uses of the world.

Sir William Crookes' prophecy that the world would starve for lack of bread as soon as the Chilean nitrate supplies were exhausted has for some years led the chemical public to believe that a wheat famine was in sight, but that time is so far distant that no one living to-day need have misgivings on the subject.

To chop parsley remove leaves from the stem. If the leaves are wet, first dry in a towel, then gather between thumb and fingers and press compactly; with a sharp vegetable knife cut through and through; again gather in fingers and recut, so continuing until parsley is as fine as desired.

From a student's contribution to an English teacher: "As we passed this farm we saw great piles of pumpkins in the fields and bins of apples in the cellar."

We need pasteurized swill barrels as well as pasteurized milk in the hog lot.

KILL THE GOPHERS AND SQUIRRELS

KILMOL
SQUIRLGOPHENE

Kills 'em all

Requires less than **ONE** cent minute for each burrow.

KILMOL is thoroughly practical. Most of the large land owners in California are using KILMOL exclusively on their properties. The work is paying big dividends in increased crops.

The Government has approved KILMOL and the Government Inspectors are using it exclusively all over the state. KILMOL can be used in either dry or wet weather, and the average cost for labor and material is only 18 to 28 cents per acre.

Government tests have shown KILMOL to be 100 per cent efficient. KILMOL kills 'em all.

I shall be glad to send you further information and prove these statements. Write me today.

Or, if you wish to try this method immediately remit $17.50 and I will send you the complete outfit the DESTRUCTOR, 3½ feet of hose, carrying strap and five gallons of KILMOL. With an average infestation this will treat over 60 acres, and the cost thereafter for KILMOL will be but $6 for each additional 60 acres. If you are not satisfied after giving it a fair trial I will gladly refund your money.

5 gallons KILMOL to-day $100 in crops to-morrow.

Barley poisoned according to Government formula, $7.50 for 100-lb. drum. Strychnine, 65 cents an ounce.

Send personal check or money order TO-DAY.

Herbert F. Dugan
Dept. K, 1170 Sutter St.
San Francisco, Cal.

Victor Buck Rakes

One of the hardest tools for a California rancher to get is a satisfactory Buck rake. Eastern made rakes do not meet Pacific Coast conditions. The Victor is especially adapted to Pacific Coast conditions. Has extra long teeth, extra wide high wheels and strong frame. Easy to work. Leverage perfect with heaviest load.

Send for Literature
The H. C. Shaw Company
Manufacturers
62 N. California St., Stockton, Cal.

Ask Your Dealer for
EL DORADO COCOANUT OIL CAKE
for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market today. If your dealer doesn't carry it, address
EL DORADO OIL WORKS
149 California St. San Francisco

APOLLO
BEST BLOOM
GALVANIZED SHEETS

Send for our Brand Building Booklet

Highest quality and best known Galvanized Sheets manufactured. You should use no other for Culverts, Tanks, Silos, Roofing and Siding. APOLLO Roofing Products are sold by weight by leading dealers.
AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh.

How to Get Most Alfalfa

UP until March 10, when his pure-bred Jersey herd was dispersed by auction sale, D. G. Whiting of Heber had the reputation of having about the finest dairy in Imperial valley and so it can be supposed that he knows dairying and alfalfa raising. His ideas on the cutting and irrigation of alfalfa may therefore be considered as worth considering. This question is important, as by making the wrong combination of irrigation and cutting a good deal of alfalfa may be lost. The practices on this place are those found best where water can be had when required and where the soil is pretty heavy, though the latter factor is less important.

The plan followed is to irrigate twice to a cutting, once just before cutting and again when the alfalfa is some distance along. The checks are irrigated three or four days before cutting, and as soon as the ground is solid enough to get on to the machines are put on. Owing to the extremely quick drying, due to high temperatures and the very dry atmosphere, the alfalfa is not permitted to lie at all, but rakes follow the machines at once and before long the bunch rake is put on to gather the hay in bunches of about 300 pounds to cure. The alfalfa is not permitted even then to dry out as fully as it should, but is put in the stack having enough moisture to let it sweat somewhat.

By having the ground well supplied with moisture at the time cutting takes place, and cutting the alfalfa at just the right time, there is very little check to its growth. Then after the hay is all off, another irrigation is given. Possibly this is more irrigation than is necessary, but the alfalfa does finely with it.

An interesting fact about alfalfa growing in the Imperial valley is that the soil apparently needs no inoculation to put bacteria on the roots and yet no clovers ever grow in the soil before it is reclaimed and furthermore there is the least bacterial life found in any real soil anywhere, and as little humus or vegetable matter as in any real soil. One thing about it is that this soil is rich in lime and there is nothing on earth that alfalfa enjoys more than an abundance of lime.

Related to the common belief that alfalfa does not like a heavy soil and that a good stand is difficult to secure in a heavy soil is the fact that Imperial soils are almost universally heavy, and very heavy. (They say "hard" soils there, while loams are called "soft" soils.) Yet the stands, except where overpasturing, poor leveling or sun scald is found, are excellent.

Furthermore, it is a fact of far-reaching influence that the older the alfalfa is the better the stand will take water; that is, the quicker the water will sink in and the farther down it will go. The soil in natural condition is very slow in absorbing water, but in two or three years the alfalfa roots loosen up the soil, just as vegetable matter from stable manure, cover crop or what not always loosens up heavy soils.

Under these conditions it is undoubtedly a fact that alfalfa should be used on every piece of land in the valley to prepare it for other crops. Of course, though, it is all right to plant barley or something like that on raw land while getting ready for more intensive farming. All crops in the valley do much better after alfalfa than before. One date ranch the writer visited had been set out on raw land, and the result was that it was almost impossible, by applying manure or otherwise, to get the soil so that it would handle freely. It is strange that with abundant water alfalfa is not set out in orchards there, but the ranchers never seem to have thought of it.

Alfalfa does two great things for such soil and for almost any soil. First, it enriches it greatly by adding nitrogen to it, the most valuable and expensive plant food there is. Furthermore, it improves the mechanical condition by distributing organic matter (or vegetable matter) all through the soil, which is like renewing its virgin thrift or filling it with leaf mould. This makes the soil take water so much more freely and makes it easier to handle generally.

Furthermore, alfalfa does something that no applications of stable manure or growing of cover crops ever can do—it improves the mechanical condition of the soil far below the line that any plow or cultivator could reach, and it adds food down to the same depth.

This little account was supposed to refer particularly to alfalfa in the Imperial valley, and on account of the peculiar conditions existing there it does apply more particularly than elsewhere, but it is also in some ways applicable all over.

Water Requirements of Plants

Briggs and Shantz of the Bureau of Plant Industry, Washington, D. C., have carried on investigations in the water requirements of different crops at Akron, Colo., and at Amarillo and Dalhart, Texas, in 1910 and 1911.

The results of these experiments are given in Bulletin No. 284, Bureau of Plant Industry. The average of these experiments is as follows: Pounds of water required to produce a pound of dry matter (whole plant), millet 275, sorghum 306, pig weed 275, tumble weed 277, Russian thistle 336, corn 369, sugar beet 377, rape 441, potatoes 448, wheat 507, barley 539, buckwheat 578, oats 614, sweet clover 709, field peas 800, alfalfa 1,068.

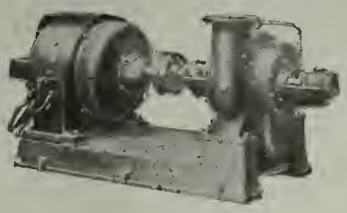
The pounds of water required to produce a pound of grain was as follows: Sorghum 790, millet 923, buckwheat 1,037, barley 1,244, wheat 1,357, oats 1,680. It required 166 pounds of water to produce a pound of potato tuber and 110 to produce a pound of sugar beet root.

The water that would suffice for producing a 50-bushel crop of oats, according to these figures, should be sufficent for producing 2,500 lbs. of alfalfa. The 50 bushels of oats will contain 171 lbs. of digestible protein, while the 2,500 lbs. of alfalfa will contain 277 lbs. of digestible protein. Of digestible carbohydrates and fat the 50 bushels of oats contain 942 lbs., while the 2,500 lbs. of alfalfa would have 1,012 lbs. The alfalfa with its larger root system, and especially if the plants are not too thick, will be able to draw moisture from more soil than can the oat plant, and will therefore be able to produce more than the 2,500 lbs. of alfalfa to the 50 bushels of oats. In fact, it will likely be nearer two tons, which would contain 444 lbs. of digestible protein and 1,620 lbs. of digestible fat and carbohydrates.

Corn, Kafir, milo, oats, wheat, rye, barley and the grasses belong to a large family in botany known as Graminacea, or the "grass family." From this great family of plants come most of our food because it supplies food for both man and animals. What an important group of plants this is and how could society exist without some of these plants?

Study the progress you have made in your farm practice and see whether it agrees with the teachings of those with wider experience. Perhaps your success has really been almost a failure.

WORTHINGTON
Irrigating Machinery



Our name has stood for highest quality machinery since 1850.

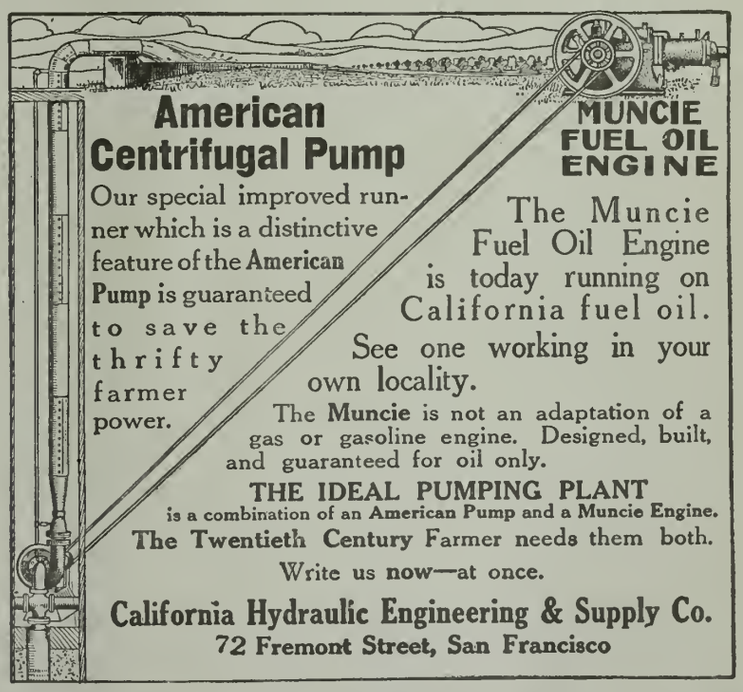
Pumps and Engines

Complete plants installed, electrically or gas engine driven. Pumps are water balanced and are for belted or direct connection.

SIZES CARRIED IN STOCK
Pumps, 1-inch to 12-inch.
Engines, 1½ H. P. to 40 H. P.

Our 80-page finely printed and illustrated Bulletin of Irrigation Number O. F. should be read by every irrigationist. It is the only complete book of its kind. Sent without cost on request.

Henry R. Worthington, 306-308 Sharon Building
San Francisco



American Centrifugal Pump

Our special improved runner which is a distinctive feature of the American Pump is guaranteed to save the thrifty farmer power.

MUNCIE FUEL OIL ENGINE

The Muncie Fuel Oil Engine is today running on California fuel oil.

See one working in your own locality.

The Muncie is not an adaptation of a gas or gasoline engine. Designed, built, and guaranteed for oil only.

THE IDEAL PUMPING PLANT
is a combination of an American Pump and a Muncie Engine.
The Twentieth Century Farmer needs them both.
Write us now—at once.

California Hydraulic Engineering & Supply Co.
72 Fremont Street, San Francisco

Protect Your Chicks

White Diarrhoea is fatal and very contagious. It attacks chicks the first five weeks and kills 60 to 75 per cent of all chicks hatched. May wipe out your whole hatch. Save your chicks by putting in their drinking water

CONKEY'S
White Diarrhoea Remedy

Chicks drink freely and doctor themselves. Don't take chances on losing your whole hatch. Keep Conkey's White Diarrhoea Remedy on hand as an effective treatment and preventive measure. Prices 25c and 50c.

Lice Eat Poultry Profits

Lice are responsible for many poultry diseases, poor egg records and great loss of profits. You can get rid of them quickly by dusting your fowls with

Conkey's Lice Powder
A combination of effective lice killing ingredients. Use it on setting hens now, because it Kills the Lice—Doesn't harm Chicks. Price—15 oz., 25c; 48 oz., 50c.

Spray your poultry house and paint the roosts with
Conkey's Lice Liquid.
Thoroughly wipes out these pests that prey on your chickens at night. Qt., 35c; Half Gal., 60c; Gal., $1.00.

Guard your chicks against the deadly head lice.
Conkey's Head Lice Ointment
Kills them every time—doesn't harm chicks. 10c and 25c.

MONEY BACK IF NOT SATISFIED
Ask for Conkey's Practical Poultry Book—IT'S FREE
If your dealer cannot supply you, write direct to
THE G. E. CONKEY CO., CLEVELAND, OHIO

Treatment of Light Soil

IN a recent number you mentioned planting alfalfa in orchards. I have forty acres of peaches five years old, Muirs and Phillips clings, seven miles from Atwater, Merced county, one mile from the Merced river, where irrigation is plentiful up to the middle of August. The trees have made an average growth and look well. The land is very sandy, no hardpan nor alkali, and it is well drained, but looks in places too sandy and blows some. I believe something can be done that will greatly benefit the land and I wish to know what can be done. Will alfalfa really benefit the trees and soil, or would it be better to plant grain, grass or some other vegetation and plow it under. Water is not plentiful after the middle of August.—G. C. B., Atwater.

If you had water all summer long it would be possible to grow alfalfa in the orchard to good advantage. This, however, can only be successfully done if there is no dry season in which the alfalfa will suffer for water. As soon as it would feel the need for more water it would draw so from the trees that the latter would suffer. Alfalfa, then, can hardly be advised.

A great thing to help very sandy soil is to have plenty humus. Vetch would provide nitrogen and under most conditions would be good to grow on light soil. However, rye would probably be better in your case, as it is a fine winter grower and has such a vigorous root system that it will bind the soil together better than anything else you could probably obtain. This will have to be planted about the time that the rains start in the fall. A good dressing of stable manure or complete commercial fertilizer with it will be advisable on blow sand, as that frequently is not well supplied with plant food. Melons or pumpkins can be grown in the center of the rows this summer if you so desire, as you will have plenty moisture for trees and melons also. Plants of the melon and squash family are able to do with moderate moisture and go well with trees. They also will hold your soil down somewhat. Adding vegetable matter and mineral plant foods to the soil are the two things most needed in your case.

The Irrigation Farmer's Motto.

"Less irrigation and more cultivation," is the proven result of many experiments and investigations in irrigated sections of the country. By keeping the soil loose, cultivating after every irrigation, much moisture can be retained in the soil that otherwise will evaporate from the surface and be lost. Even young alfalfa and grain crops may be cultivated by using a weeder or a spiketooth harrow with the teeth set backwards. A few weeks ago Prof. Stanley F. Morse, Agriculturist of the Arizona Agricultural Experiment Station, found a field of drilled alfalfa about 1½ inches high which had been irrigated two weeks previously, the soil having dried very hard. At his suggestion a disk harrow, well weighted, was run over the field twice in opposite directions with the disks set straight: it was followed by a spiketooth harrow having the teeth slanting backward which was run in both directions also. A fairly good mulch was secured that could not but benefit the alfalfa; scarcely one per cent of the plants were destroyed by this operation. Of course this field should have been cultivated with a spiketooth harrow as soon as possible after irrigating. Twenty-five per cent of the water ordinarily used may frequently be saved by judicious cultivation.

Preventing Soil Blowing.

Although some kinds of soil blow much more than others, much can be done to make them worse or to keep them from blowing, according to the method of handling. Both the conditions which cause loss and the methods used as a remedy, have been described in Kansas as follows, and often apply here.

In many instances land has been plowed for years with a disc plow to a depth not exceeding three to five inches. Sometimes the disc harrow was the only instrument used in preparing the seed-bed for wheat. Straw has been burned annually. Such land, of course, is soon in very poor physical condition, and under such conditions windstorms of twenty miles an hour have been known to do a great deal of damage.

Keep the surface rough, or corrugated, if you wish to prevent blowing. The disc harrow pulverizes the ground too much. It is better to use a cultivator or a spring-tooth harrow in sections where there is danger of the soil blowing badly. Listed ground blows very little if the listing is done at right angles to the direction of the prevailing winds. Manure, straw or trash furnishes effective protection when spread upon the ground uniformly. The experiment stations in Western Kansas succeeded in checking the blowing out of fields of wheat by planting the wheat deeper than usual, so that the ground was left furrowed after drilling.

Fertilizers in Holland.

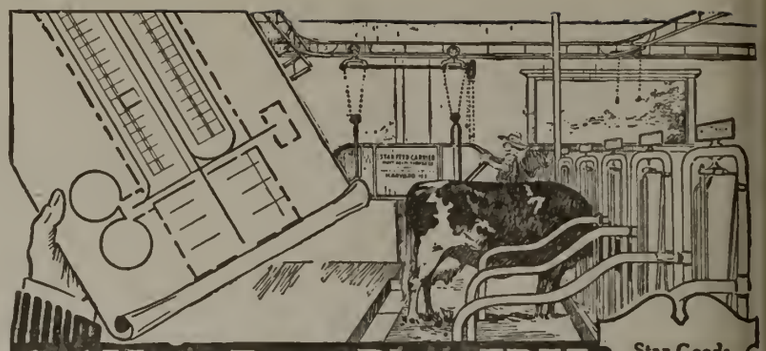
The European countries all owe much of their productivity to the fertilizing done, including the return of all possible stable manure to the soil. In Holland such fertilization has reached a high state of excellence, according to a recent consular report.

The kind and amount of fertilizer used depends entirely on the nature of the soil, just as it does in other countries. In bulb raising the sand is removed down to the level of the peat, the latter being exposed to the frost, which crumbles it; and an excellent garden mixture results from mixing it with sand and manure. In the grazing districts, liquid manure, manure direct from the stalls, and lime are used to a large extent. In some sections a mixture of 30 hundredweight of superphosphate, 20 hundredweight of kamit, and 6 hundredweight of nitrate is used per acre. This is generally applied on farms where there are no cattle and produces most excellent results. The droppings from cattle in the fields are scattered once or twice a week and sometimes as often as once a day. Mud, cleaned from the ditches, is also used as a fertilizer. Often as much as $20 or $30 worth of fertilizer is applied to one acre of ground in a year. Cattle droppings sell as high sometimes as 2 cents American per wheelbarrow load.

The system of rotation is much the same as in the United States, though rotation is depended on much less in Holland than America. Fertilizers are generally deemed sufficient to restore to the soil those properties which any given crop may take out of it. In many instances the same soil produces abundantly the same kind of grain year after year by proper fertilization.

The methods of tillage are deep plowing, much work with the hoe, and a great deal of personal attention to every foot of the ground.

An old adage, you cannot eat your pie and have it too. Modern proverb says: "Soil cannot give up its plant food and have plenty left." Fertility maintenance is no idle suggestion.



Get Your Barn Plan FREE

Star Goods Sold by Reliable Dealers Everywhere

IF you are remodeling or building a barn, *let us help!* Send a rough sketch of your barn floor and we will send a *blue print* drawn up to meet your special requirement and showing modern economies with reference to arrangement of Stalls, Stanchions, Litter Carriers, etc. No fee. No obligation. All we ask is that you read carefully our labor and wage-saving Catalog. It goes free with the blue print.

STAR Barn Equipment

(Stalls, Stanchions and Litter Carriers)

You will find many patented features on STAR LITTER and FEED CARRIERS—features that are practical and exclusive with us.

No matter what your arrangement of stalls and gutters the "STAR" is practical for use in your barn. Patented curves and switches make the STAR universally usable. Raises easily—lowers in a jiffy. Every moving part ball bearing.

Manufactured in both rod and rigid track types—in 6 different styles. Automatic dumping and returning device.

Handsome — substantially constructed — free from useless parts. Least repair expense —and most satisfactory carrier made.

The Swinging Boom keeps your barnyard clear of obstructing posts.

Write for Big Book Today

We've been helping farmers for 33 years. Our Catalog shows how we're doing it. Send coupon for this catalog at once; also send sketch of your barn floor. Remember, it places you under no obligation. Send today!

HUNT, HELM, FERRIS & CO.
42 Hunt St., Harvard, Ill.

Send Coupon For 100-Page Book!

HUNT, HELM, FERRIS & CO.
42 Hunt St., Harvard, Ill.
Gentlemen: Please send me complete information about Star Barn Equipment.
Name.....
Address.....
State.....

PACIFIC COAST DISTRIBUTORS
PACIFIC DAIRY MACHINERY CO.....San Francisco, Cal.
MONROE & CRISELL.....Portland, Oregon
DAIRY MACHINERY CO.....Seattle, Wash.

The Rivets

on "Western" Surface Irrigation Pipe are driven by a specially constructed machine which we control by patent rights. "Western" is the strongest pipe on the market to-day; also the most serviceable and economical. Why not save money and use this strong, riveted pipe. It's the modern pipe for the modern farmer.

Solid Lengths 10 Ft. 6 In.

Send us a postal and we'll send you full particulars, explaining why "Western" is better than any other pipe.

We make Riveted Pipe, Riveted Well Casing, Steel Tanks and Irrigation Supplies.

Western Pipe and Steel Co.
of California
444 Market St., San Francisco
1758 North Broadway, Los Angeles
Branches: Fresno and Taft

MARTINEZ NURSERY
ESTABLISHED 1884.
Offers the following varieties in strictly No. 1 Trees; 25,000 Bartlett Pear, 10,000 Apple (leading varieties), Autumn and Winter Pear, also Plum, Prune, Peach, Apricot and Almond Trees, Grape Vines, Ornamentals, etc. Price List on application.
THOS. S. DUANE, Prop.
Martinez, Cal.

How to Start an Orange Grove

By D. J. Whitney

THIS question is one that will come very close to many persons ho wish to leave the city for the ırm, or come to California from the ast:

"I am a man working on a salary ith just a little capital and with ttle knowledge of farming, and write) ask your advice on a proposition ıade by different companies selling range, olive and lemon land. Their roposition is to plant a small acre-ge and give it expert care for those ho, like myself, are unable to attend) it until the trees come into bear-ıg. It sounds encouraging to any ne in my position who is anxious) make the sacrifice of a few years ı order that he may eventually own grove, live upon it and have it sup-ort him.

"As an example, their price on a ve-acre tract, planted to two-year-ld trees, with five shares of water, he water piped through a large con-rete pipe running across the highest oint of the land with a sort of ydrant at the head of each row of rees and expert care given to the ame would be $600 an acre, 10 per ent down, balance at 7 per cent in-erest. Water would cost $8 per acre er year, care $2 per acre per month nd the balance of payments $5 per cre per month, including interest. Total payments would be about $35 er month, and in four years they laim that I would begin to have an ncome-bearing grove.

"The proposition looks good, yet rom what I can learn of the market n oranges at present date it seems o me that prices are very low. If uch are the present conditions, my ittle investment of five acres four ears hence would simply be out of he question as a paying proposition, onsidering the thousands of acres of oung orchards that are already set ut and will be in bearing in four or ve years in addition to what Cali-ornia already produces."

The right advice in your case it is ifficult to give. A man runs a good leal of risk in starting any kind of arming under the best of conditions, nd it is just so much harder when e buys a farm while remaining in he city.

You have to run a risk of the low range prices, but so you do with any ind of fruit, and there is probably ess chance of the orange market be-oming permanently depressed than n almost any other kind of fruit pro-luction, thanks mostly to the Cali-ornia Fruit Growers' Exchange. It s true that the bearing acreage is apidly increasing, especially in Central and Northern California, where in recent years orange planting has gone ahead by leaps and bounds, but there is great opportunity of de-velopment of the markets also. You will notice that prices now are quite satisfactory.

Prices on oranges depend a good leal on the time of marketing, and his on location, and in figuring on n investment the location is a big actor.

In regard to the method of secur-ng a grove that you speak of, it will e satisfactory under the right condi-ions, in total price paid and in the uality of the grove when it finally omes into your hands. It will only e right if soil, moisture and location re thoroughly satisfactory and the elling company is thoroughly reliable nd will give proper care to the rove, and it is rather hard to get the ight combination of all these fea-ures.

If a man is not thoroughly familiar with the business he is intending to ndertake (citrus growing in this case) he should not think of buying without a thorough investigation by an expert on the three points named bove. He should get an experienced nd successful citrus man or an agri-cultural engineer to see that the soil was of the proper texture for the trees to be planted and not underlaid by hardpan or having other bad fea-tures. Secondly, he should see that it had a location where temperatures were right and where heavy frosts could not be expected to damage trees and fruit.

This is especially true with lemons, for the man who owns land that is thoroughly satisfactory for lemons from a temperature and climatic standpoint has a good thing. Oranges and olives are not likely to compete with lemons for land and the infer-ence in your question that either of the trees might be planted on the same land at least suggests a peculiar situation. He would also want a bigger acreage of olives to keep him busy than of citrus trees and would not go so deep in his jeans per acre for the land. In fact, he should go slow on buying olive groves accord-ing to that proposition, though he could consider a lemon or orange proposition if everything was satis-factory.

And a very essential point is to have sufficient moisture for the ma-ture grove. This is something which causes lots of failures and disappoint-ments, for there is too much of a tendency toward making a given amount of water cover more land than it should. The result is that the trees have enough water while they are young, but not enough water for the mature trees to evaporate and to make a good crop. One of the big-gest troubles on many irrigated farms is scarcity of water for part of the year, so you had better go slow un-less you are sure that there is lots of water and that the situation is satisfactory for soil and temperature and climate generally. This advice applies whatever method of buying or paying for the land is used or what-ever crop is to be raised.

Now for the right method of buy-ing, or of getting "back to the land," by the city dweller. If you have ex-pert advice on any proposition such as you outline and find that soil, water, location and price are all satisfactory, the above method of buying may be satisfactory, provided the company is reliable and will give the best kind of care to the grove. Not all may do this, for there is a temptation to save in labor and other expense. However, if good care is taken of a grove purchased in this way, it will be better in all prob-ability than many citrus groves grown by individuals, and the price will not be more than that of other groves. Meanwhile the buyer, having a defi-nite property and studying up on citrus culture, should learn a great deal while the trees are growing. The charges you outline are reasonable if the property is good and care what it should be.

Wire Injury of Trees.

Not infrequently valuable trees are killed or seriously injured by using them for anchors, for guy wires, or for clothesline posts. If a tree is to be used for this purpose only tem-porarily, several blocks of inch board two inches wide should be placed around the trees, over which the wire may pass. This method is not safe for more than two or three years. A better way is to screw a large screw hook into the side of the tree, to which the wire may be attached, or for heavy anchorage, a bolt with a hook at one end, may be put through the tree trunk and the wire attached to this.

Mudding seeds of any kind into the ground, either in field or garden, never pays. The earth is quite sure to bake if this is done, and that puts the biggest kind of a handicap on the growth of the plants.

HEALD'S

Schools Located in
San Francisco, Oakland, Fresno, San Jose, Sacramento, Stockton, Chico, Reno, Nev.; Santa Cruz, Los Angeles, Riverside, Long Beach.
Write for Prospectus to the school you wish to attend.
Main Office, Post st. and Van Ness ave., San Francisco.

Redeem Land by Deep-Drilled Wells!

You can make more money drilling wells for irrigating land with an Armstrong Well-Drilling Outfit than you can in any other business with the same investment. $50 to $75 profits a day made on an Armstrong Outfit. A few hun-dred dollars invested in an Armstrong outfit will redeem several thousand acres in a single sea-son. Drill any formation, any depth, any place. Gasoline or Steam, Walking Beam, Spudding or Combination Outfits. **Write for Free Illustrated Book.** If you need a gasoline engine ask for our big engine catalog.

Armstrong Machines positively handle every kind of formation in any part of the country!

One man can handle entire outfit.

Perfected machine of our 45 years' experience.

Armstrong Mfg. Co., 403 E. 3d st., Los Angeles. Cal. Home Office and Factory, Waterloo, Iowa.

Unseen Forces Behind Your Telephone

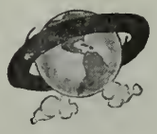
THE telephone instrument is a common sight, but it affords no idea of the magnitude of the mechanical equipment by which it is made effective.

To give you some conception of the great number of persons and the enormous quantity of materials required to maintain an always-efficient service, various comparisons are here presented.

The cost of these materials unassembled is only 45% of the cost of constructing the telephone plant.

Poles
enough to build a stock-ade around California—12,480,000 of them, worth in the lumber yard about $40,000,000.

Telephones
enough to string around Lake Erie—8,000,000 of them, 5,000,000 Bell-owned, which, with equip-ment, cost at the factory $45,000,000.



Wire
to coil around the earth 621 times—15,460,-000 miles of it, worth about $100,000,000, including 260,000 tons of copper, worth $88,-000,000.

Switchboards
in a line would extend thirty-six miles—55,000 of them, which cost, un-assembled, $90,000,000.

Lead and Tin
to load 6,600 coal cars—being 659,960,000 pounds, worth more than $37,000,000.

Buildings
sufficient to house a city of 150,000—more than a thousand buildings, which, unfurnished, and without land, cost $44,000,000.

Conduits
to go five times through the earth from pole to pole—225,778,000 feet, worth in the warehouse $9,000,000.

People
equal in numbers to the entire population of Wyoming—150,000 Bell System employes, not including those of connecting companies.

The poles are set all over this country, and strung with wires and cables; the conduits are buried under the great cities; the telephones are installed in separate homes and offices; the switch-boards housed, connected and supplemented with other ma-chinery, and the whole Bell System kept in running order so that each subscriber may talk at any time, anywhere.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES
One Policy *One System* *Universal Service*

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

THE FARMERS' MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

"Petaluma Thoroughbred Baby Chicks" —Give us your orders and we'll give you the best chicks to be had in Petaluma, at lowest market prices. (White Leghorns our specialty.) We give satisfactory guarantee. References: Petaluma National Bank, Petaluma Savings Bank, Postmaster of Petaluma. Write immediately to **McFadden & Starke, P. O. Box 26, Dept. H, Petaluma, Cal.**

Penn's Quality Barred Plymouth Rocks have withstood the test of time; selected and mated to produce the BEST; annual April reduction on stock eggs to $6 per 100; 20 per cent off on eggs from Oakland and Petaluma winners. Catalogue and 1914 mating list free. **Golden Rule Poultry Farm, St. Helena, Cal.**

Campines, Silver and Golden—Improved American type only; eggs for hatching; Silvers from $2.50 to $5 per setting, according to quality; Goldens, $5 per setting. **Arthur King, Box 30, Route 1, San Luis Obispo.** Member American and Pacific Coast Campine Clubs.

S. C. White Leghorns—Baby chicks for sale; baby chicks, day old, $10 per hundred, and $90 per thousand. Eggs for hatching, $4.50 per hundred. Cockerels and pullets, prices on application. **The Model Poultry Farm, Box L, Irvington, Cal. A. de Campos, Prop.**

BLIVEN,
Rhode Island Red specialist of the Pacific Coast, is offering eggs for hatching for April only at $6 per 100; 200 or more, $5 per 100; send for 1914 mating list. **C. F. Bliven, 596 Mission St., Santa Cruz, Cal.**

White Leghorn Baby Chicks from stock selected by Hogan's system for laying qualities and of great vitality, $9 per 100. **Arthur King, Box 30, Route 1, San Luis Obispo, Cal.** See my Campine advertisement.

Brown Leghorns—A fine lot of breeding and exhibition cockerals, stock from the best Eastern breeders; also good Buff Orpington hens and grown pullets; eggs for hatching. **Fredensborg Ranch, Suisun, Cal.**

Turkeys—Bourbon Red, White Holland, Mammoth Raven Black, eggs, $5 per dozen. **Mrs. B. Hocking, Guasti, Cal.**, winner of first prizes and specials at California State Fair, Los Angeles, San Diego, etc.

The Goodacre Blue Ribbon Strains of Heavy Layers. New catalogue free. Customers say ours start early and never stop; sure winter layers; Anconas, Reds nothing better. **Goodacre Bros., Compton, Cal.**

PETALUMA HATCHERY—Now booking orders for spring. Send for circular. Can ship chicks to points reached in three days. When ordering why not get the best? **L. W. Clark, Petaluma, Calif.**

Hatching Eggs in plenty from Hoganized S. C. White Leghorns. Heavy layers; remarkable fertility. $6 per 100. Reductions on large orders for March and April. **Pine Creek Poultry Farm, Los Gatos, Cal.**

True Blue Andalusians, imported strain. Eggs, $2.00 for 14; $9.00 per 100. The best on the Coast. Write for circulars with winnings. **J. H. Huddleston, 342 Edgeware Road, Los Angeles, Cal.**

Free—66-page catalogue, describes in detail prices, etc., on 19 kinds of baby chicks, hatching eggs, incubators, brooders, etc. We ship everywhere. **The Pioneer Hatchery Co., 112 East Eighth street, Los Angeles, Cal.**

Baby Chicks. Write for book, "The Day Old Chick Business." Its free. White Leghorn and Black Minorca chicks my specialty. **Lusher's Hatchery, 420 Kentucky st., Petaluma, Cal.**

Feed Croley's Infant Chick Feed. Raises more healthy chicks than all the other feeds combined. Manufactured by the **Geo. H. Croley Co., Inc., 631-637 Brannan St., San Francisco.**

Baby Chicks and Hatching Eggs—S. C. White Leghorns, Rhode Island Reds, heavy laying strains, 100 or 1,000, finest poultry plant in California. **Pebbleside Poultry Farm, Sunnyvale, Cal.**

Aucona Eggs by insured parcel post from my purebred persistent laying strain of mottled Anconas, $1.50 per 15 postpaid. **E. T. W. Barnes, Sisson, Cal.**

Selected eggs for hatching from Toulouse geese and M. B. turkeys, 21 cents each; pearl guinea and runner duck eggs, 8 cents each; also Belgium Hares. **J. Wellborn, Warren, Oregon.**

POULTRY—Continued.

Baby Chicks—Orders taken now for S. C. White Leghorns from vigorous, free range hens; price $6.50 per 100. **H. P. Hansen, R. 4, box 177, Petaluma, Cal.**

Rhode Island Reds Exclusively—Eggs $6 per 100; day-old chicks $15 per 100. Cash with orders, or stamp for reply. **L. W. Neilsen, R. 2, box 1, Petaluma, Cal.**

Have 50 White Leghorn hens, young stock, for breeding, and three cockerels and four pullets, Rhode Island Reds, for sale at $1 each. **William Christie, Sonora, Cal.**

For Sale—Pekin duck eggs for hatching, also (white and brown) Indian Runner eggs, case lots of 250 eggs, $3 per 100. **H. Brewer, Jr., Santa Rosa, Cal. Route 5, Box 78.**

Miles' Anconas are record egg producers, also winners at California's best shows. Write for free illustrated circular. **L. Miles, 511 West Seventeenth street, Santa Ana, Cal.**

Buff Leghorns, prize winners at Santa Rosa and Petaluma; eggs $1 per setting, $5 per 100; chicks 15c each, $12 per 100; May chicks $10, 100. **Amos Bowler, Petaluma, Cal.**

Trap-Nested S. C. White Leghorns—Cockerels, breeders, eggs and chicks. **Arthur R. Schroeder, Box 22, San Gregorio, Cal.**

BABY CHIX AND EGGS—From grand laying strain of S. C. Rhode Island Reds. **Inwood Poultry Farm, Box 192, Folsom, Cal.**

For Sale—Light Brahma eggs, $1.50 per 15; from as fine a flock as there is in the State. **W. F. Kaplinger, Salem, Ore., R. 6.**

French Houdan Eggs, $1.50 per 15, also Black Minorca and Rhode Island Red eggs, $1 per 15, all from choice stock.—**Mrs. B. Hocking, Guasti, Cal.**

White Rocks—Mottled Anconas—Trap nested stock feeding; no drones; **catalogue free. C. Daniel & Sons, Ideal Poultry Yards, Hoquiam, Wash.**

High-Class White Wyandottes, 15 eggs $1, 100 $5, circular exhibition matings, free. **F. E. Crouse, Osslau, Iowa.**

For Sale—Rose comb Rhode Island Red eggs, $1.50 per setting 15, from imported English cock. **W. H. Hall, Sunnyvale.**

Albert M. Hart, Clements, Cal. (successor to Ed. Hart), Mammoth bronze turkeys and eggs for sale. (Circulars.)

Indian Runner Ducks—Prolific layers; "American" and "English" strains; eggs $1.25 for 13, $2 for 26, $7 per 100. **Howard Clark, box 384, Corning, Cal.**

Indian Runner Ducks; fawn and white; ducklings from prize stock; hatching eggs, $1 dozen. **Mrs. Nutman, Mayfield, Cal.**

Eggs—Buff Orpington $1.00; setting runner ducks, 75c, baby chicks 15c, 20c. **Glendale, Fleming ave., San Jose, Cal.**

Electrically Hatched Chicks are uniformly strong and vigorous. All standard breeds furnished. Write for price list. **Electric Hatchery, Hayward, Cal.**

Barred Plymouth Rocks—"The kind that win and lay." Eggs for hatching and stock for sale. **Chas. H. Vodden, Box 693, Los Gatos, Cal.**

Baby Chicks (White Leghorns) shipped on approval before remitting. No weak ones charged for. **Schellville Hatchery, Route 1, Sonoma, Cal.**

Petaluma Brooder Stove. Modern way of brooding. Free catalogue. **Petaluma Brooder Stove Company, Hayward, Cal.**

R. I. Red Eggs and Chix from great laying strain of **Inwood Poultry Farm, box 192, Folsom, Cal.**

Ring-Necked China Pheasants for Sale —Also eggs in season. Address **T. D. Morris, Agua Caliente, Sonoma Co., Cal.**

Anconas—Howard's world beaters for laying eggs, $1.50 setting, $7 100. **Mrs. C. M. Howard, Otay, Cal.**

Prize winners — White Indian runner ducks and eggs for sale. **G. Buker, 2004 26th ave., South San Francisco.**

Buff Orpington eggs for hatching: **Cook's strain,** $5, $3 per 15. **Mrs. E. Nelson, route 2, Visalia, Cal.**

The Buff Orpingtons You Want—Eggs for hatching; breeding birds for sale. **Ernest L. Wilder, Los Gatos, Cal.**

Anconas—Eighty hens; eggs, $4 a hundred; $1.00 for 15, after May 1. **J. O. Spring, 3926 Lyon Ave., Fruitvale, Cal.**

If You Want Eggs, get Andalusians. **Daniel Calbreath, Monmouth, Oregon.**

LIVESTOCK

Ohio Improved Chesters (O. I. C.)— Spring boars ready for service. Fall boars about ready for use. Bred sows, tested and soon to farrow. New crop of weaned pigs will be ready for shipment about May 1st. All are from big, aged sows and by extra heavy-boned boars. All stock strictly first class in every respect. Certificate of registration free with every individual. **C. H. Cunningham, Mills, Sacramento County, Cal.**

Grape Wild Farm Thoroughbreds— Guernsey Bulls of Advanced Register Breeding. Berkshire Hogs. Largest herd. Best Eastern strains. All ages for sale. **A. B. Humphrey, Prop., Mayhews, Sacramento Co., Cal.**

A few high-grade Toggenburg-Saanen bucks from registered milch goats, $7.50 each at weaning age. **Ernest Enderlin, Lower Lake, Lake co., Cal.**

Tamworths—The big red bacon and block hog. Send for circular and prices. **Cottle & Hobson Co., Amsterdam, Merced County, Cal.**

Glenview Poland China stock for sale —**Chas. R. Hanna, R. D. 3, Riverside, Cal.**

Mulefoot hogs are best for Pacific Coast. For information write **John Dunlap, Williamsport, Ohio.**

Registered Duroc Hogs, $15, at weaning time. Out of champion ancestors. **Ed. E. Johnson, Turlock, Cal.**

Your opportunity to buy standard New Zealand Junior Bucks for $1 to $2. **O. Goettel, Upland, Cal.**

Registered Berkshires, $10, at weaning time. **M. D. Good, Mt. Vernon, Wash.**

MISCELLANEOUS—FOR SALE

Plumbing Supplies—Why buy second-hand plumbing when you can buy new material so cheap?
Prices lower than ever.
We sell to you at less than wholesale prices.

Bath tubs @	$8.00 ea.
Toilet Outfits, complete @	8.50 ea.
White Enamel Sinks @	2.75 ea.
30-Gallon Boilers @	4.50 ea.
2-part Wash Trays @	2.50 ea.
Wash Basins @	2.25 ea.

The above prices are quoted on perfect stock. No defects whatever.
We carry a complete line of all sizes Water Pipe, Sewer Pipe Fttings of every description. Brass Goods, Tools and all Fittings and Fxtures needed to complete any cottage, store, hotel or apartment house.
Small orders as well as large ones always receive our prompt attention.
It costs nothing to inquire for prices, etc.
We specialize to out-of-town trade.
Mail inquiries promptly answered.
Simon Bros., 1049 Howard st., San Francisco, Cal. Address Plumbing Department.

For Sale—Almost new Case threshing outfit, 36x58 in. steel separator, self-feed, wind stacker, 60 h. p. traction engine, all in good order. Might trade for livestock or real estate. $2,000.00. **L. E. Brockman, 452 East Second street, Glendale, Cal.**

Second-hand and new Water Pipe—All sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Farmers should keep account of their business. We have a simple system of bookkeeping that will show results each month or each year. Write for sample. **Jones' Farm Record Co., 327 Main st., Stockton. Agents wanted.**

Paint, Roofing, Wire Fencing, Engines, Pumps, Furniture, Groceries. **Old Hickory Supply Co., Dept. 5, San Francisco.**

Second-Hand Pipe—Largest dealers in standard pipe and screw casings; prices right; guaranteed first-class. **Pacific Pipe Co., Main and Howard sts.**

Moose and Elk Heads—Fine fur rugs, glass eyes, tanning and fur work. **F. B. Fluley, Taxidermist, Oroville, Cal.**

PHEASANTS

Booklet, "How I Raise Pheasants," 20c. Prices free. **H. W. Myers, Tacoma, Wash.**

POULTRY WANTED

Wanted—White Embden and Gray African geese, White Pekin ducks; eggs, birds and young of above. **Land Development Co., Battle Mountain, Nev.**

REAL ESTATE

For sale—Looking for an absolutely safe, good investment, one that positively should double in value in three years? Have 1,000 acres of choice A1 level land located in San Joaquin valley, midway between San Francisco and Los Angeles, with fully paid water stock in two companies, price $75 per acre, terms one-fifth cash, balance including interest payable in annual installments of $6,000. Liberal release clause. Others in same locality holding at $100 per acre for identically the same land. Natural gas exists in this locality, so probably oil, too. Address **Owner, 904 Oakland avenue, Pasadena, Cal.**

Victoria, Australia, wants settlers— Special inducements offered by State Government, which owns lands, water, railways and free schools; excellent climate; resembles California; no extreme heat or cold; small deposit and 31½ years for purchase of lands, adapted to every kind of culture; citrus fruits, apples and pears; wheat, corn, alfalfa, sugar beets; dairying, hog raising, etc.; ample markets; exceptional opportunities in irrigated districts, reduced passages for approved settlers, free particulars from **F. T. A. Fricke, Bnx T, 687 Market st., San Francisco.**

For sale—If sold immediately $75 per acre buys a half section of choice, level San Joaquin valley land, all in wheat, with A1 water stock; crop goes with the land; terms $10,000 cash, balance $3,500 when crop is harvested; $3,500 in one year; $3,500 in two years; $3,500 in three years. This is an exceptional opportunity; adjoining raw land held at $75 to $100 per acre. **The People's Real Estate and Loan Company, agents, Los Angeles.**

For Sale—No. 1 ranch, in foothills of Salinas valley, Monterey county; 171 acres, about 35 tillable, nearly level, balance No. 1 pasture, fenced and cross-fenced; pretty good house, good barn, 10,000 gal. tank, 12 ft. mill, plenty of water, shade trees around house; 4 miles from R. R. depot; excellent road, price $4,000; no agents' replies wanted, a bona fide bargain. **H. H., 3491 16th st., S. F.**

For sale—Here's an exceptional opportunity for speculation or for the farmer. Only $10,000 cash down buys a section of $75 per acre very choice, level alfalfa land in the fertile San Joaquin valley, with real water stock. Balance, including interest, payable in annual installments of $5,000. This land positively should double in value within three years. Address **R. F. Marek, General Delivery, Los Angeles.**

Eight years' time. Why pay exorbitant prices for land, when we can sell you fine alfalfa land within 2 miles of railroad and 13 miles of Fresno for from $50 to $75 per acre? Nothing down if you improve. Sandy loam soil, abundance of water, 10-foot lift. Let us show you. **Sunset Realty Co., 1932 Mariposa st., Fresno, Cal.**

$12 per acre buys 400-acre stock ranch in the hills; about 160 grass land, 30 acres fenced, 12 acres under cultivation; 1½ miles from county road, 3 miles from Alder Point, where new railroad depot will be opened this fall; now stocked with cattle and hogs; good house, barn and young orchard. Apply **Miss A. M. Robinson, Harris, Humboldt Co., Cal.**

5 Cents an Acre Cash—Texas school land for sale by the State. You can buy good land for $2 per acre; pay 5 cents per acre cash and no more for 40 years, but 3 per cent interest. Send 6 cents postage for further information. **Publishing Co., Dept. 88, San Antonio, Tex.**

Why not buy overlooked bargains direct from officials? Only a few investigating. Land is safe and sure. Will you write for **FREE** circulars? Some valuable land overlooked near you that YOU can now buy regardless present value. **The California STATE Land Information Bureau, Sacramento.**

20-acre Ranch for Sale—Located near Del Rey; all in bearing peaches, muscats and Thompsons; good barn, small house, first-class pumping plant, 1,000 feet irrigating pipe; trays and sweat boxes; reasonable price and terms. **P. O. box 375, Sanger, Cal.**

For Sale — 80 acres, 1 mile west of Anderson, Shasta Co., Sacramento Valley; 20 acres full-bearing prunes, 8 acres peaches and other fruit; house, barn, packing-house, good well, gravelly soil; fenced; oak timber. Price $4,500; terms. **C. B. Fitts, owner, Anderson, Cal.**

Send for illustrated circular of best, most artistic orchard home in Santa Clara Valley; 20 acres. **John F. Byxbee, Palo Alto, Cal.**

THE FARMERS' MARKET PLACE

REAL ESTATE—Continued

,800—19 acres, within one mile of depot in Los Gatos; fine view of alley; good soil; no improvements; enty of water; fine for a home or ubdivision. For particulars apply to **. F. Robertson, First National Bank dg., San Jose, Cal.**

or Sale—Small poultry ranch and family orchard adjoining Sebastopol; rice $4,000. For full description ad- ess **Owner, P. O. Box 106, Sebastopol, al.**

ast what you want—Our new 1914 booklet. Tells the how and why bout State, Government and Indian nd bargains. Send dime or stamps. **he California State Land Information ureau, Sacramento, Cal.**

holce Prune Orchard of 27½ acres, 2½ miles from Campbell on main ghway. Good crop in sight, free ater right—easy terms. $10,500. **. O. Box 8, Campbell, Cal.**

or Sale—Two acres rich, sandy loam; half mile from Petaluma; greatest usiness city West. **Mrs. A. Zeh, Gos- ge Road, Box 32, Petaluma, Cal.**

20-acre grain farm in best wheat growing section Southern Alberta for le cheap. Apply to owner, **T. A. ryant, Lake Macgregor, Alberta.**

ne Dollar an Acre—Good homestead land, from 40 to 320 acres. For par- culars address **Box 224, Dorris, Cal.**

or Sale—Villa sites on the Blue Lakes. Address **G. A. Behrnd, Midlake P. O., al.**

REAL ESTATE WANTED

arms Wanted—We have direct buy- ers; don't pay commissions; write, escribing property, naming lowest rice. We help buyers locate desir- ble property free. **American Invest- ent Association, 8 Palace Bldg., Minn- polis, Minn.**

anted—Farms from owners for sale. We have direct buyers. Send descrip- on. Magazine, particulars, free. **estern Sales Agency, Minneapolis, inn.**

ill buy homestead relinquishment— California land only; pay cash. **127 th ave., S. F.**

BUSINESS CHANCES

ree for Six Months—My special offer to introduce my magazine "Investing or Profit." It is worth $10 a copy to nyone who has been getting poorer hile the rich, richer. It demonstrates he REAL earning power of money, nd shows how anyone, no matter how oor, CAN acquire riches. INVESTING OR PROFIT is the only progressive nancial journal published. It shows ow $100 grows to $2,200. Write NOW nd I'll send it six months free. **H. L. arber, 499-20W Jackson Blvd., Chi- ago.**

ny intelligent person may earn good income, corresponding for news- apers; experience unnecessary. Send or particulars. **Press Syndicate, 1695 ockport, N. Y.**

RABBITS

ur rabbits won 26 prizes at San Fran- Francisco and Los Angeles shows. Catalogue free. **Caldwell Bros., Los ngeles, Cal., box 612.**

pring Sale—Pedigreed Belgian hares, big money makers. Write for infor- nation. **Hare and Feather Yards, 2219 ridity street, Fresno, Cal.**

Thoroughbred Belgians, with or with- out pedigrees. **Old Hickory Supply o., Dept. 5, San Francisco.**

High-grade flemish giants. Cobrook Rabbit Company. P. O. box 354, San ose, Cal.

MACHINERY AND SUPPLIES

For Sale — Farming Machinery — One new Case 60 h.-p. steam engine and ew separator, 32-inch cylinder, with lower and recleaner; also two new ections of John Deere steam plow. **Box 288, Santa Ana, Cal.**

PATENT ATTORNEYS

Dewey, Strong & Co. (Est. 1866)— Patents, trademarks, inventors' guide, 100 mech. movements free. **911-916 Crocker bldg., San Francisco.**

BEES AND HONEY

For Sale—Italian bees. For prices ad- dress **Mr. Tulnter, Corte Madera, Cal.**

SEEDS, PLANTS, ETC.

Spineless Cactus—Burbank's improved varieties of forage and fruiting cac- tus. Orders taken for immediate deliv- ery. Send for catalogue and price list. **Jesse I. Jewell, Santa Rosa, Cal.**

Berry Plants — Everything in small fruits for garden and orchard. Send to-day for price list. **Louis F. Scribner, Pasadena, Cal. R. F. D.**

Spineless Cactus—Be sure you get Bur- bank's "Santa Rosa" when buying cactus and save disappointment. **Hay- don's Nursery, San Juan Bautista, Cal.**

Two million strawberry plants, Logan- berries, blacks, gooseberries, etc. **H. A. Hyde, Watsonville Nurseryman.**

Wanted—28,000 leaves of Burbank standard cactus in leading varieties. Address **P. O. Box 265, Santa Rosa, Cal.**

Saint Regis ever-bearing red raspberry and strawberry plants. **Old Hickory Supply Co., Dept. 5, San Francisco.**

Sour Orange Seed and Seedlings, 30,000 Eureka Lemons, 50c. Otis E. Hyde, 63 North Meredith ave., Pasadena, Cal.

Vetch, timothy, clover seed. Lowest prices. **Westacott & Co., Salem, Oregon.**

For Sale—Loganberry tips. Write for prices. **Walter Campbell, Gervais, Oregon.**

Horseradish sets for sale. **Edwin Ol- son, Hillsboro, Ore., box 502.**

Clean Vetch Seed, $2.75 per hundred. **Murphy's Seed Store, Albany, Ore.**

TREES

Orange Trees—First-class navels and Valencias from carefully selected buds, and budded to strong, healthy, vigorous stock; ⅝ and over in di- ameter; 50c per tree. **A. G. Wright, Fullerton, Cal.**

Florida Sour Orange Stock, 1 to 3 feet tall; exceptionally fine; $12.50 per thousand. **Arnold Nurseries, 711 East White Oak, Monrovia, Cal.**

Robinson Citrus Nurseries, San Dimas, Cal., growers of standard orange and lemon trees. **Burbank and Mediter- ranean Spineless Cactus Plantations.**

Orange Trees—First-class navels and Valencias, one-half inch and over in diameter, 50c each or $4.75 per thou- stand. **A. G. Wright, Fullerton, Cal.**

Citrus Nurseries, Murphy Oil Company, East Whittier, California. Selected stock for sale; inspection invited.

Good Line Nursery Stock—Prunings, all kinds, 10 per cent under market. **Farmers' Nursery, Sebastopol, Cal.**

800 orange trees for sale. **A. C. Blay- ney, Fowler, Cal.**

AGENTS WANTED

Local Representative Wanted—No can- vassing or soliciting required. Good income assured. Address **National Co- Operative Realty Co., V-1605 Marden Bldg., Washington, D. C.**

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEA- COCK, 1695, Lockport, N. Y.**

HOUSEHOLD SUPPLIES

"We pay the freight"—To reduce the high cost of living, send for our Wholesale to Consumer Catalogue. The Direct Supply Co. has combined with us. **Smith's Cash Store, 110 Clay st., San Francisco.**

AGRICULTURAL LIME

Lime Is Nature's Crop Producer. We manufacture the highest grade agri- cultural lime—both hydrated and ground carbonate. Get our free book- let and prices. **Pacific Lime and Plaster Company, 807 Monadnock Bldg., San Francisco, Cal.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Fran- cisco, Cal.**

EDUCATIONAL

Van der Naillen's. All Engineering School; estab. 1864. **51st and Tele- graph ave., Oakland, Cal.**

DOGS

Handsome Sable and White Collie Dog. Very heavy coat, perfectly trained, docile, year old. Price $10; approval. **James Lowe, Encanto, Cal.**

FROGS

Frogs—Investigate breeding big East- ern bullfrogs; unusual possibilities west of mountains. Tremendous de- mand. **Aquaifeco, Seymour, Conn.**

"Bean" Centrifugal Pumps

The Test of the Pump is the Pumping!

When you connect up the pump and turn on the power—that's when the real test comes! And that's when the owner of a Bean begins to realize that he has made the right selection. The Bean (known for many years as the Caton) is the most efficient and satisfactory centrifugal pump on the market. Among its many distinctive advantages is the **Bean Water-sealed Stuffing Box** which practically ends stuffing box troubles. It insures an absolutely air-tight seal. The bean is automatically balanced regardless of water level; has ring oiling bearings; and suction and discharge can be turned to any desired angle.

Send for Catalogue 28-B; It illustrates and describes the entire Bean line of horizontal and vertical pumps and gives much helpful pumping information.

BEAN SPRAY PUMP COMPANY

225 West Julian Street **SAN JOSE, CALIFORNIA**

Bigger Yields—Better Fruit

Cultivate and get better results. Better care of the soil means better, bigger crops. Cultivation keeps down the weeds, mulches the ground and prevents moisture losses. With

Rumely ToeHold Tractor

you can cultivate just as much as you like at a minimum expense. The ToeHold is low, narrow and light—it will turn a 10-foot circle. With it you can cultivate close to fruit-bearing trees without injuring the fruit or the trees.

The ToeHold Tractor is California-built, especially for orchard and vineyard work, but will plow and haul with the best of the medium sized tractors. It burns gasoline and stove-tops.

Ask for interesting literature.

RUMELY LINES

Kerosene Tractors	Threshing Machines	Cream Separators	Road Machines
Gasoline Tractors	Corn Machines	Feed Mills	Grain Elevators
Engine Plows	Baling Presses	Stationary Engines	Steam Engines

RUMELY PRODUCTS COMPANY
(Incorporated)
Power-Farming Machinery

San Francisco **Chicago**

Coulson's
Chick Foods
will help you raise and increase your flocks. Try our Complete System of Feeding as described in our free book "Chickens."
Coulson Co
PETALUMA, CAL.

BLACK LEG
LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50
Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. ct. Use any injector, but Cutter's simplest and strongest. Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (ours or any other), as it affords less protection than fresh. Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly.
THE CUTTER LABORATORY, Berkeley, California.

In the Evening
The family is in the living room—everybody tired of reading and talking. No one feels like playing the piano. A bored, listless silence fills the room. One by one they give up and go to bed.
A Victrola would solve the problem. The whole world loves music. At your command Caruso will sing—De Wolf Hopper tell side-splitting stories. You can sit back in your favorite chair and hear the soft strains of "Traumerei," the stirring martial music of "Faust" or the tempting melody of "King Chanticleer."
The machine shown is a Victrola VIII
As an investment for your family's pleasure, a Victrola is unequaled. Did you know you could buy one for as little as fifteen dollars? From that they range to two hundred-fifty.
Mail the coupon and a catalog giving prices and full information will be sent to you.
BYRON MAUZY
Everything in Music,
250 Stockton St., San Francisco.
Byron Mauzy,
San Francisco.
Kindly send your catalog to
Name .....
P. O. Address.....
City..... State .....
Parcel Post will bring them to your door.

Tells why chicks die
J. C. Reefer, the poultry expert of 1631 Main St., Kansas City, Mo., is giving away free a valuable book entitled "White Diarrhoea and How to Cure It." This book contains scientific facts on white diarrhoea and tells how to prepare a simple home solution that cures this terrible disease over night and actually raises 98 per cent of every hatch. All poultry raisers should write Mr. Reefer for one of these valuable FREE books.

One Sack of Our Fertilizer Equivalent to One Ton of Manure.
Make Your Soil More Productive
Use the modern method of handling manure. Use GYPSUM in your stable—eliminates flies and retains the essential elements, usually lost in the form of gases. It counteracts black alkali and turns it into plant food. Corrects acidity in soil. Collects moisture from the air. Increases every crop—excellent for alfalfa. We also sell Blood Meal, Ground Phosphate Rock, etc. WRITE FOR QUOTATIONS.
STANDARD FERTILIZER COMPANY, Inc.
328 North Los Angeles Street,
Los Angeles, Cal.

The Record for Big Eggs

THE search for the biggest egg ever laid by a genuine, simon-pure hen is bearing fruit—hen fruit of the finest quality. In the March issue of "Orchard and Farm" there was told of an egg laid by a Black Minorca hen owned by F. H. Driver, San Francisco, weighing four ounces. This record has gone to the discard. The hen can feel proud of her achievement, but she is a back number nevertheless as compared with some of her competitors. Anybody that can beat out the records given below should do it, and there will be the great satisfaction of finding out what is actually the largest egg found and noted from a California hen or a hen anywhere in America or the world. An Oregon hen made a strong bid for first place this month, but has been nosed out — or is it billed out?—by one from California.

A. Bert Freeman of Ashland, Ore., writes of what two of his hens did. He states: "The first big egg was laid in March, 1911, measuring in circumference 7¼ inches the short way and 8½ inches over the end, and weighed six ounces even. This egg was what might be termed a 'freak,' having had a complete egg of normal size and shape in the center. The space between the two eggs was filled with white. This egg was laid by a two-year-old Buff Orpington hen.

"The second real large egg that I got from my flock was laid by a Black Minorca pullet in April, 1913. It measured 6¼ by 7¼ inches in circumference, weighing 4¼ ounces and having two yolks. I have now nothing but S. C. Black Minorcas, and each spring I get a number of double yolk eggs, but have never equaled these two eggs.'"

Poplar Hen Popular.

A Plymouth Rock matron owned by E. W. Ridgway of Poplar, Tulare county, did even better than these fowls, according to a clipping from the Porterville "Messenger," under date of March 4, 1914. "This egg," it is said, "resembles a goose egg, and measures 9 1-16 inches extreme circumference and 6¾ inches the short circumference The egg weighs a bit more than 6½ ounces." A hen will have to go some to beat that, but if country newspaper editors happen to get an overload of inspiration on some time there will be no doubt but what they can put even a couple of ounces upon that record.

It is respectfully suggested that contestants follow the plan of the boy that hung up an ostrich egg in the henhouse with the card, "Keep your eye on this and do your best." Then, in case unbelievably large eggs are produced and the census director calls us to time, we ask in self-defense that the meat he removed and the shell kept for inspection.

Outclasses Columbus

In line with freak eggs, a visitor to the office the other day brought in an egg of normal size, but rather a wonder of its kind. You remember the time that Columbus made the Spanish dons sit up and take notice by standing an egg on end. He had it hard boiled and crushed the shell a bit. It was a wonderful stunt the first time it was played, or so our school books say, but a California hen has gone him one better and produced eggs that will stand up of their own accord. Unfortunately we don't know the hen.

This visitor brought a setting of eggs. On taking them out of the package and laying them on the table he noticed that three promptly stood up on end. He promptly broke open one and found that it had no yolk. It seems that the inside was all white and the heavier portion had settled at one end, which proceeded to get as far down as possible, elevating the other end. Eggs that are all white have been an ideal of the confectioner and baker for years. Unfortunately these would not produce chickens.

Anyway, you have got to go some to beat the hen. Outside of certain humans, she is the biggest little thing in the country.

Treatment for Gapes

Gapes is a disease affecting certain birds, fowls, and particularly chicks 1 to 4 weeks old. It is caused by a small worm, called the gape worm, which attaches itself to the windpipe of its victim.

The symptoms are frequent gaping, sneezing, a whistling cough, with discharge of mucus and worms, dumpishness, weakness and drooping of wings. Dead birds will show forked worms attached to the windpipe.

The adult female gape worm is much larger than the male, her body being filled with eggs and embryos. These embryos appear in the droppings or are coughed up. So the trouble is spread by contamination of runs, feed and drinking water. Embryos are often found in earthworms.

To eradicate the disease, isolate affected birds, treat drinking water with potassium permanganate; burn dead birds and remove chicks to fresh ground which is not infected. Cultivation of infected ground is said to eradicate the worms in three years.

Individual cases may be treated in one of three ways:

By confining the chick for a short time in a box which has air-slaked lime on the floor. The lime is said to cause the worm to release its grip and the chick to sneeze it out.

Stripping a feather, leaving a small tuft, moistening with turpentine and introducing into the windpipe, care being taken not to lacerate the windpipe or suffocate the chick.

Two horse hairs tied together, the knot trimmed, run down the chicken's throat and removing in a twisting manner will also remove the worms. Gape worm extractors are also on the market.

Roost Mites

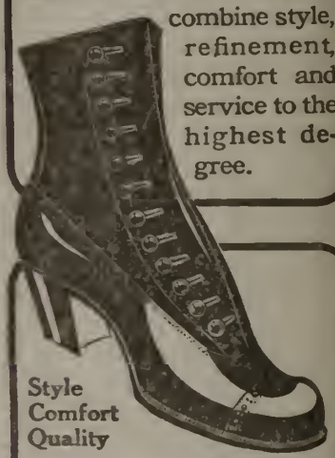
Roost mites are very common and troublesome. When they become numerous enough they not only infest the nests, but other parts of the building, especially cracks and crevices, as well as the roosts. They are much like tiny spiders and are often called spider lice by poultrymen, says a Minnesota bulletin.

Mites are easily exterminated by applying kerosene to all infested parts of the building. They become numerous as soon as the warm weather comes. As prevention is better than cure, it pays to paint your roosts once every four or six weeks in winter and every two weeks during warm weather. You will probably never see a mite in a house so treated.

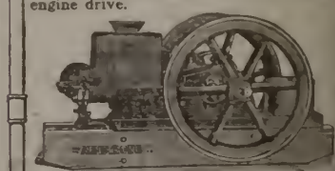
Cholera Cure for Fowls

Cholera is a most dreaded disease among chickens, which is seldom cured. I found by my own idea that calomel will cure in the last stage of the disease. I keep one-quarter grain tablets in the house all the time, and when a hen is taken sick give one-half tablet. The second dose, which should be given in four hours, will effect a cure. Tried once, always used.—M. T., Holly, Ore.

The meat of yarded poultry is always more tender than that of fowls having free range, due to the extreme muscular development of the latter.

Mayer HONORBILT SHOES
There are no shoes at popular prices that in any way compare with the classy Mayer Honorbilt shoes for women. They combine style, refinement, comfort and service to the highest degree.

Style
Comfort
Quality
Mayer Honorbilt Shoes are not only fine looking but dependable for wear. They are "built on honor." The finest upper leather is selected, and the soles are of special tannage — everything first class throughout. If you want the dressiest and best wearing shoes obtainable, demand Mayer Honorbilt Shoes.
WARNING—Always be sure and look for the Mayer name and trade mark on the sole. If your dealer cannot supply you, write to us.
We make Mayer Honorbilt Shoes in all styles for men, women and children: Drysox, the wet weather shoe; Yerma Cushion Shoes and Martha Washington Comfort Shoes.
MILWAUKEE Mayer CUSTOM MADE
F. Mayer Boot & Shoe Co.
MILWAUKEE
HONORBILT

ENGINES-PUMPS-MOTORS

MILLER Hydraulic Automatically Balanced Enclosed Runner, Ring Oiling Pumps are unequaled either for motor or gas engine drive.

Armstrong Engines are guaranteed for FIVE YEARS, and are furnished with Magneto and patent Roller Valve Gear. Sizes 1½, 2, 4, 6, 8, 10, 15, 20-h. p. Send for catalog.
NORMAN B. MILLER CO.
701 HOOKER & LENT BLDG
San Francisco, Cal.

History of the Ancona

By H. Cecil Sheppard, Berea, Ohio
President Ancona Club

A WAY back in the days of the Pilgrims there lived a little old father who, though he ate much food and lived simple ways, was but a weazened and apparently a gross excuse of a healthy, robust man.

This little fellow was not afflicted with chronic bodily ills. On the contrary, he was possessed of fairly good health of mind and body. He hunted fowl and when of necessity, a few Indians. His great hobby was a wild turkey dinner and, I have been told by the relator of this story, that this Pilgrim would face death a hundred times to get a good bird of this kind.

One day Mr. Pilgrim set out on a search for the nucleus of a Thanksgiving dinner. He traced a path on the ocean beach, occasionally running into the woods for a shot, but not a turkey was in sight. In desperation he retraced his steps, expecting to go to his log fire, but he had not proceeded far when a nice, fat chicken crossed his path. He did not fire; instead, he followed the pullet and came upon a nest of eggs. He stopped and scratched his head. Here was a perplexing situation—would he eat the hen or the eggs?

Now, Mr. Pilgrim was a sport. So he decided to flip a pebble, coins having been scarce at that time. The egg side came up, so he gathered up the shells. During this operation the hen looked on in awe and when the man with the gun started homeward, she followed.

Englishmen know something of chickens, and Mr. Pilgrim was quick to note that this was no common specimen. Here was a bird that surprised him. But when he ate the eggs he was still more surprised, so much so that when the hen came back next day, accompanied by a rooster of the same type, this little old man just kept them around his log cabin. Mr. Pilgrim devoted his time to raising this variety of pullets. Incidentally, he ate their eggs and grew fat.

To end this story right now would leave the reader dissatisfied. So I will tell the rest, as little as there is of it. Mr. Pilgrim a short time later came down the beach and stumbled over the body of a man. By the features it was plain to see that this person was an Italian. There was a piece of bark in his hand, clutched like a drowning man grasps the last straw. Something was scratched on it, but being written in Italian Mr. Pilgrim could not decipher it. He took the body to a garden near the sea and buried it, retaining the bark.

Years after he learned that this man had sailed across the ocean from Ancona, Italy, with a cargo of chickens, intending to breed them in America. He had an eye for business, but not a weather eye, and when a storm broke it destroyed his little boat. One pair of Anconas drifted ashore with him on a raft. The words on the piece of bark were: "I starve to death to feed the chickens."

I would "Chantecler" this story if the chanting was good. But alas, it is not! It is a fable with several morals but without a good one, and I am almost ashamed to put it down in black and white.

Laying all jokes aside, I want to call the attention of my Ancona friends and those who are not yet acquainted with this breed of chicken, that within the last year the production of Anconas in America has increased more than two-fold. This I am informed by members of the International Ancona Club, which is the Ancona missionary agent of this continent and Europe.

And since this good work has formed itself into a gigantic movement in the interest of poultrymen, it seems only right and proper that every man who raises chickens should at least inquire into the merits of this new kind of fowls.

Without a doubt, the Mottled Ancona will be the most popular egg-producing hen in this country before many years, and it is now, while the movement is growing, that the opportunity to breed these pullets should not be overlooked.

The original home of the Anconas was in Ancona, Italy. The little brown natives prized them as the greatest asset in their string of feathered possessions. In 1840 or thereabouts, they were imported to England, where they thrived even better than on Italian soil. They now have a record of 270 eggs for each hen a year, and their eggs weigh on the average two ounces. The chicks are spry from the very first, and mature rapidly. Their rapid growth enables them to acquire an early independence, so essential in chickens hatched in an incubator. The sexes should be separated when seven to ten weeks old, and this gives the poultryman a chance to sell his surplus stock of males at good prices for broilers.

Anconas are the most profitable breed of chickens now raised in this country. 'Tis true they do not surpass in population the Leghorn, but nevertheless, all qualities considered, it pays a man to have Anconas in his poultry outfit. They are superior to the Leghorns for winter laying and stand frost and snow well. The development of the Anconas in this country is such that the Italian breeder would scarcely recognize the bird here. And its development is due to the zeal of the fancier, who has made it a fowl to be proud of, yet one for every class of breeders.

The great trouble with most poultrymen is that they have to be shown before they will change their breeds. Well, if that is the case, why not try two or three kinds of chickens at the same time? This is a sure way to prove the value of the Ancona, if you will not take the statements of those who have handled different kinds of chickens.

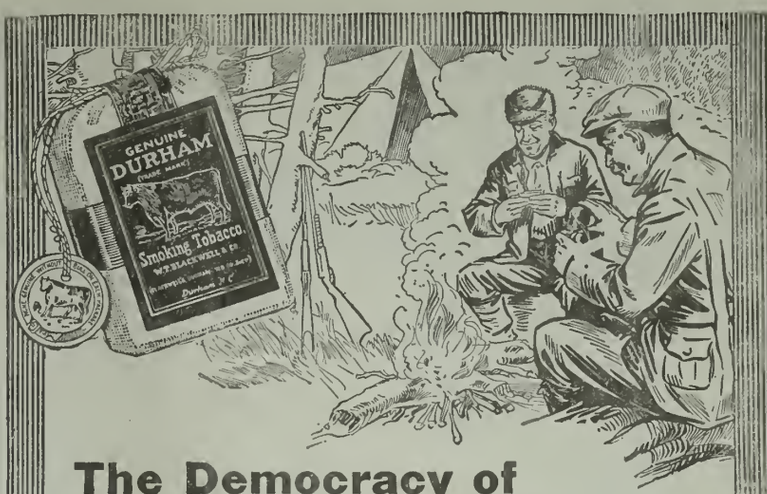
At the poultry shows this winter there will be more Anconas shown than ever before, and, mark my word, there will be a greater demand than ever for them.

Now just a word to those who are not in the poultry business: There is no "dead" capital in the poultry game. This is its greatest advantage. If you buy land, your capital is invested in such a way that it will bring no returns unless you build a house or grow grain. The crops may fail, the house may not rent readily. If you go into the mercantile business you must depend on the weather for the success of your venture. You may lose from bad debts. If you are a manufacturer, you will find your machinery constantly wearing out. You are always facing demands for higher wages. But in the poultry business your hens are always laying, if you have the right kind, and the breeding costs you little money, while the returns are greater in proportion than any other enterprise.

Think this over, and don't fail to remember that the Anconas are the right kind of chickens to breed.

Early spring finds the hen sprawled out n the sun and wallowing in the first dust of the season. A dust bath in the sunniest corner of the house will furnish the hen a lot of pleasure and take care of the louse question. It's the happy hen that lays the eggs.

It's the pullet that's the last on the roost at night and the first off in the morning that lays the most eggs. Save her for a next year's breeder.



The Democracy of "The Makings"

Environment doesn't make a man—or a "Bull" Durham smoker. There are red-blooded, self-reliant, energetic *men* in every walk of life—and these are the millions of men, of all classes and occupations, who find thorough *satisfaction* in the fresh, fragrant cigarettes they *roll for themselves* from "Bull" Durham tobacco.

The rugged millionaire sportsman and his able-bodied guide in the great North woods are at opposite ends of the false social scale; but in the true *measure of manhood* they meet on an equal footing—share the same sack of "Bull," and respect each other for being *men.*

GENUINE
"BULL" DURHAM
SMOKING TOBACCO
(Enough for forty hand-made cigarettes in each 5-cent sack)

"Bull" Durham is a *distinctive form* of tobacco enjoyment that gives lasting, healthful satisfaction to more millions of men than all other high-grade smoking tobaccos *combined!*

Ever notice that aromatic flavor, that unique savor? That's a secret "Bull" Durham process. You get it only in "Bull" Durham.

FREE An Illustrated Booklet, showing how to "Roll Your Own," and a Book of cigarette papers, will both be mailed, *free,* to any address in U. S. on postal request. Address "Bull" Durham, Durham, N. C., Room 1100.

THE AMERICAN TOBACCO COMPANY

Make $2000.00 more per Year

You Can Make Big Money With a well machine that makes irrigating wells fast and at a low cost. **Demand for such wells is unlimited in California and the entire Southwest.** The best and fastest machine for this work and this territory is the

IMPROVED POWERS COMBINED BORING AND DRILLING MACHINE

Bores thru gravel, sand and clay like a streak of lightning. If rock is struck it drills thru that. Forces casings perfectly. One man and one team can run it. You can make $1 an hour for your spare time.

Write today for catalog and EASY PAYMENT proposition.

LISLE M'F'G. CO., Dept. 1, 625 3d St., S. F.

In This Age of Sanity and Sanitation

By Mrs. John W. D. Lullo

THIS is an era of sanitation; everything we buy to eat or wear bears the words "Sanitary," "Sterilized" or "Hygienic."

The old-fashioned "Watch and pray" has been revised into "Fumigate and sterilize." This is, perhaps, very well, although there is no fundamental reason why all might not prove advisable.

We read alarming stories of the number of germs and bacteria which may, and do, find lodgment in a very small area, then we proceed to air and dust and fumigate, but what about the unseen things, which reach to the very vitals of our existence, the dinner kettles, the frying pans and the dish rag; are they sanitary, sterilized and hygienic?

Webster defines dirt, which is no longer a polite term, germs; sounds better, as "matter out of place" and anything whatever on the surface of a supposedly clean cooking utensil is most assuredly out of place.

Look at your frying pan; is it clean and smooth, as bright or brighter, in the inside as the day it was bought, or has it souvenirs of all the meals which have been cooked in it since it was bought, and each one garnished with a coating of dried dishwater and a few germs from a cloth which is more or less unsanitary, according to the purposes for which it has been used, and the methods of the user. Not an appetizing idea, is it? Yet anything other than the original metal is unquestionably "foreign substance." How about your graniteware; has it an extra coating of dirt? If the original enamel is covered up with a dark coating of grease and dishwater, you can hardly argue that it is sterile.

The aluminum cooking utensils, which are gaining a well deserved popularity, are met by the objection on the part of some, "they are so hard to keep clean," but the simple truth of the matter is that people have not yet learned that they can get as filthy as the familiar iron, agate and tin vessels.

The thoughtful person will hardly consider any number of embroidered doilies or centerpieces a substitute for clean food, and clean food cannot be prepared in a dirty dish.

There is not the slightest doubt but that many cases of sudden and alarming illness might be easily traced to unclean cooking utensils, with their attendant ptomaines, and that, in homes, too, where the mistress of the house is considered a fine housekeeper. Some few years ago the doctor of a certain community made something over twenty hurry-up visits following a neighborhood festivity. Investigation disclosed that the "fine cook" who made the ice-cream just had so much to do that she did not wash and scald the freezer before putting in the cream, and maybe it was not well washed the last time it was used. There were no fatalities and one 14-year-old girl who had eaten eleven dishes of the cream with no bad effects stated proudly, "Mama has brought us children up so that a little bit of dirt, more or less, in our food don't hurt us."

In this instance it proved fortunate, perhaps, yet on the whole hardly commendable.

It is not difficult to keep one's cooking things in such condition that there can be no possibility of disease from that source. It may be quite a job to get them in proper shape, if they have been badly neglected, but the results will justify the effort.

If the frying pans are too bad, the quickest way will be to cover the shiny black crust of nastiness with kerosene and burn it off over a blaze, then scour thoroughly. This, of course, cannot be done with enamel ware, but is very efficacious with iron or steel.

The easiest and best way to clean the pans, skillets, pie plates, small kettles, etc., is to take the largest vessel obtainable and with a generous quantity of concentrated lye, say, a half pound to five gallons of water, boil the articles, submerging them completely, and keep it up until the grease is all loosened, then while the things are still hot, scour them vigorously. For this purpose there is nothing better than good sharp sand which has been well washed; failing this, ashes are good, and any of the widely advertised cleaning preparations have a good basis, for their claims, although, for a general cleaning of the heavier things one hardly appreciates the absence of scratch. Having scoured until the article is clean and bright, wash thoroughly in good, hot soap suds, scald in clean water and dry perfectly before putting away where they will not be exposed to the dust.

If your pie pans are discolored and the outer rim filled with kiln-dried nastiness, put the family off without pie for one time and clean the pans.

A small, sharp stick is an invaluable assistance in cleaning the seams, corners and the rooled over rims, where the dirt will settle and defy the cloth. The small skewers used for roasts are first class and the free use of these will do much to prevent a need for more stringent measures.

Having gotten the utensils in good condition, it requires only constant vigilance to keep them so. When it becomes necessary to scrape a pan or kettle, for efficiency's sake and the nerves of those in hearing, do it right. Don't put your knife blade at right angles to the surface and scratch, scratch, until one's blood runs cold. Place the knife or scraper as nearly flat as possible and scrape the surface smoothly and cleanly, then a little scouring, every time the utensil is used, will serve to keep it in decent condition. When anything is burned on, or is unusually hard to wash off, a sprinkle of lye boiled up for a few minutes or a shovelful of ashes, or a spoonful of washing soda, and all the water the dish will hold boiled while the other dishes are being washed will save a lot of scouring.

The objection sometimes urged that "scouring the pans makes things stick," is only an evidence that the cleaning has not been thorough and an absolutely clean dish is absolutely odorless and tasteless.

When all this scouring and scalding have been done the dish cloth should be looked after to see that it is clean and free from unpleasant smell and that it is well rinsed out and hung up to dry, not queezed out in a wad and left to sour and mold. The inside of the stove is the only place for a "smelly" dish rag.

Of course, it is understood that aluminum ware will not endure the drastic treatment of lye, soda or ashes, but must be simply scoured with the milder preparations with which the market is flooded. However, a good boiling with lemon, rhubarb or any sour fruit waste facilitates matters wonderfully.

Now, look at your meat board; is it a rich brown with a feel to the fingers like a freshly cut slice of bacon? If so, split it into nice slender sticks and use it to kindle the fire with and then keep the new one clean by much scraping, scouring and scalding.

And the inside of the stove is the proper place for cast-off rags, shoes, hats, boxes, old bones and the endless accumulation of trash which collects about every house.

It is much more sightly in ashes than lying about or dumped on some other person's vacant land, and may be burned much more safely in small quantities in the stove than in the always dangerous bonfire.

When the housewife has her cooking utensils sanitary, which after all means clean, and her beds and bedding needing no apology, she may profitably, if she has time, turn her attention to the more showy efforts of the so-called improvement clubs and civic societies, and the like, for after all, if we sweep before our own doors we are setting our neighbor a good example, which is about all we can do, unless his dirt blows over on us.

College Ideas on Farm Life

"Write some limericks about the farm," was the assignment recently given an English class at the Kansas Agricultural College. Here are a few that were handed in:

There was an old farmer named Andy,
Who built a big barn and a dandy;
His old woman got sore
'Cause the house had no floor,
But would you have that worry Andy?

Said old man Royal to his son,
"I know how this farm should be run,
And I don't want no jays
With their book-farming ways
Come fooling around here, not none."

But this likely young chap from the woods,
Who was fond of his flocks and his broods,
Got started, they say,
In the book-farming way,
And now he delivers the goods.

There was a good farmer named Fred,
Who built him a splendid low shed;
His implements there
He kept with great care—
"'Tis better and cheaper," he said.

There once was a farmer named Wellem,
Who raised good potatoes, couldn't sell 'em.
He put an ad in the Star,
Then they went by the car;
When you see any farmers, you tell 'em.

The swill over-ran the tin pail;
The light in the kitchen was pale;
There was added a drain,
And a large window pane—
The house is no longer for sale.

There was an old lady in Krot,
Whose kitchen was woefully hot;
Hubby thought it was right,
But he made a big fight
When she said: "Then you cook; I will not."

Some Useful Hints

Glue That Really Sticks—Nearly every housekeeper who has occasion to use glue for mending articles in her home finds frequently after the glue dries, the article to which the glue has been applied breaks, tears or springs apart. This can be remedied if glycerine is added to the glue in the proportion of one part of glycerine to four parts of glue.—Mrs. T. L., Bozeman, Mont.

Keeping Down Dust—If before sweeping dip your broom in coal oil. You will have no dust, and carpets and matting will look like new. It will also make the fleas scarce.—Mrs. S. G., Shievely.

To Keep Moths Out of Carpets—Spread a damp cloth at the edge of the carpet. Go over the cloth with a hot iron. If the moths have deposited any eggs the heat will kill them. I do the same thing with any goods that I think have been reached by the moths.—Mrs. T. R., Tulare

Good Food Wasted

Reports from some of the food specialists of the Department of Agriculture indicate that in certain sections there is a serious waste of a valuable food, due to the fact that many housewives do not appreciate the value of suet in cooking and do not know how to use it. As a result many throw good food suet into the garbage pail, or else in rare cases use it with meat trimmings for soap making. Many are unaware that suet possesses the same food value as lard, and if properly tried out is a satisfactory substitute for frying purposes, for shortening, and in making savory fats. Apparently some of the cook books have misled the American housewife by stating that suet is good only for soapmaking. In Europe, however, this food is carefully kept and rendered, and in Germany, suet and lard are used interchangeably for frying and shortening.

The Household Exchange

WE are grateful for the enthusiasm manifested by receiving so many good and helpful suggestions to lighten the work in the kitchen from our readers on Kitchen Conveniences.

This month we would like to hear from you on the Laundry, which would imply: Dry cleaning, laundrying the common clothes, how best to keep them white, laundrying the woolens and white waists, the white silk and white kid gloves, etc.

All previous receipts sent in on any of the subjects given here from time to time will be considered with the new ones.

The following rules must be observed in writing for this department:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only.

Not more than two suggestions a month may be sent by one person. Do not send a letter with your suggestions. The suggestion itself is enough.

The editor reserves the right to publish any suggestions, whether or not they win a prize.

This contest is not confined to California alone, but is open to "Orchard and Farm" subscribers in any State.

Address all your suggestions to Household Editor, "Orchard and Farm," Hearst building, San Francisco, Cal.

WE are sure our sisters will find some new and helpful ideas from the different kitchen conveniences given below by the five prize winners for this month. These to our department seemed the newest and most practical, although most of the ideas showed good sense and clever little inventing to save unnecessary steps and work, and these will be given in later issues of this paper.

First prize, Mrs. A. Joseph, Quincy, Cal., twenty-six piece silver set-$8.00
Second prize, Mrs. G. E. Wiard, Concord, Cal., set of six silver tablespoons and six teaspoons----$4.00
Third prize, Mrs. A. L. Smith, Biggs, Cal., set of six silver knives and forks ----------$3.50
Fourth prize, Mrs. S. B. Carter, Vanwyck, Idaho, silver sugar shell and butter knife----------$2.00
Fifth prize, Lillian B. Streeter, Los Angeles, Cal., food chopper--$1.75

For each of the five next best suggestions we are sending a handy needle case filled with every imaginable kind of needle, pin, bodkin, hairpin and safety pin.

The followng are the prize winning suggestions:

A Service Table.

The best time and labor saver I have in my house is a small table 2 by 2½ feet, on ball-bearing rollers. All around the upper edge is a rim an inch hgh. When setting the table this little table can be rolled up to the china cupboard, loaded with all the china and tableware needed and rolled to the dining table and unloaded when dinner is ready. Then again the table is loaded at the stove and unloaded at the dining table. It is then used as a side table, upon which is put empty soup plates and dishes used for other courses, and then it is covered with a pretty doily, and the dessert is served from it. Lastly, it is loaded with the dishes, rolled to the sink and thence to the cupboard with clean dishes.—MRS. A. JOSEPH.

Home-Made Dustless Mop.

Take an old worn out broom and about one dozen old stocking legs. Cut each leg lengthwise into halves and bind with cord on the stock of the broom just above the bristles. Use the upper part of one of the stockings to cover the binding. When they are securely fastened on, immerse in a cupful of kerosene oil. The mop is then ready for use.

Go over the linoleum and woodwork in the kitchen each morning, making it easy to keep clean.—MRS. G. E. WIARD.

Mending Broken China.

To mend broken china, moisten the edges with good carriage varnish, then pack together and let stand for three or four weeks. I have mended china in this way, and find it will make it as good as new, and the china may be used for hot or cold articles.—MRS. A. L. SMITH.

To Clean Silverware.

To clean silverware just take the potato peelings, put them on and boil them fifteen or twenty minutes, then put in the silverware and boil them fifteen or twenty minutes also. On taking the silver out and drying it, the pieces will be just as bright as if you had rubbed them with the best silver polish, and it will be less trouble.—MRS. S. B. CARTER.

For Hot Kettles, Etc.

In my originally planned kitchen I put my utensil cupboard at the left of the stove. The top, which is 38 inches high, I covered with zinc and everything hot from the stove goes on here with no fear of burning. This does away with all asbestos mats, newspapers or boards that I used to use on an oil cloth covered table. The zinc is very inexpensive, costing 79c for an ordinary work table.—LILLIAN B. STREETER.

Good Cake Tin.

A labor saving invention is to have one long cake tin divided in the middle by a straight piece of tin soldered on each end. Then half the quantity can be put in one end and half in the other, and two kinds of cake can then be made, or layers made if preferred, by placing the one end on top of the other when done and taken out.—MISS M. BENTEL, Santa Rosa, Cal.

Greasing Cake Pans.

This is an easy and neat way to grease bread and cake pans. Take a stick about six inches long and around one end tie loosely a piece of soft clean cloth. Fill a small agate pan half full of lard and put on one corner of stove, where it will keep warm. When you want to grease a pan, dip in the cloth and by holding the other end of the stick you will save many greasy hands.—MISS ANNIE TUSOOSIAN, Reedley, Cal.

Mixing Flour and Lard.

To mix flour and lard for any purpose a common wire potato masher is very convenient. The same is handy to mix sugar and butter for cake.—MISS PEARL BYRON, Modesto, Cal.

To Strengthen Glassware.

To prevent glassware from being easily broken, put in a kettle of cold water, heat gradually until the water has reached the boiling point, then set aside. When water is cold take out the glass. This is a most desirable way to toughen lamp chimneys.—H. L. MARTINI. Napa, Cal.

Pumice Stone as Scraper.

To clean a cooking dish onto which fruit, milk, or any food has scorched, rub with a piece of pumice stone which has first been dipped in the dishwater, as pumice is always more effective when wet. It will scrape and scour the dish at the same time, leaving it perfectly clean. A small piece can be purchased at almost any drug store for two, three or five cents. I have tried many different kinds of "scrapers," but find this one to be the "best yet."—ETTA WASSON, Hover, Wash.

Mrs. Addie Cash, of Independence, Kan., has sued for divorce. She should have no trouble in having that name changed. And even if she does, it probably will pay her to wait for the change, inasmuch as her wedded life, so far, has been ill-spent.

Some wheat bran and fine charcoal before the chicks all the time will help ward off indigestion, and keep them growing.

"Gleanings in Bee Culture" Special Offer—3 months 10c
Just to introduce this invaluable 64-page bee magazine to you, and to prove that Bees make orchards pay better, we make this Special Trial offer for a limited time. You will find it full of invaluable information about bee keeping. We will send our book, "Bee Supplies," with it Free. Send coin in envelope at our risk.
THE A. I. ROOT CO., Box F, Medina, Ohio
San Francisco Office, 58 Sutter Street.

Cutaway (CLARK)
disk harrows are especially popular among farmers who understand the soil and intensive tillage, and who appreciate the big difference in the value of disk harrows. They are made in styles and sizes to meet the requirements of every farmer, whether he uses a large tractor or one small horse for power. Ask your dealer to show you a CUTAWAY (CLARK). If he doesn't sell CUTAWAY (CLARK) harrows, write us. Don't accept a substitute. We ship direct where we have no agent. Send for catalog, "*The Soil and Intensive Tillage.*" It shows the many advantages of CUTAWAY (CLARK) disk harrows over others and contains valuable information about the soil and tillage.

The Cutaway Harrow Company
Maker of the original CLARK disk harrows and plows
996 Main Street Higganum, Conn.

Bulk Chocolate

attracts flies, absorbs dirt and germs. Ghirardelli's Ground Chocolate *sold only in hermetically sealed cans,* is always fresh, clean and healthful.

D. Ghirardelli Co.
Since 1852

Send for sample can.
KNOW what a delightful beverage Ghirardelli's Ground Chocolate is.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

Useful and Up-to-Date Patterns

5489—A Neat Design—This frock is suited for informal wear and is both neat and practical. It can be developed in any of the inexpensive materials of the season. It is built without a lining, having a high or round neck, long one-piece sleeves, perforated for short sleeves, and a three-piece skirt. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 3¼ yards 54-inch material, with half yard 18-inch contrasting material. Price, 15 cents.

5498—A Boy's Suit—A neat and stylish model suitable for development in serge, cloth, or linen. It consists of a blouse with lower edge gathered into a band, having sailor collar, adjustable shield and one-piece sleeves plaited at lower edge; also knicker-bocker trousers with front closing or knee trousers with side closing. Sizes 3, 4, 6, 8, 10 and 12 years. Size 8 requires 1⅞ yards 54-inch material. Price, 15 cents.

5500—A Tailored Waist—Many novel touches have been given this model for spring wear. It is developed in one of the new cotton fabrics and trimmed with buttons and straps of its own material. The waist is made without a lining, having an adjustable shield and long one-piece sleeves, perforated for short sleeves. It may be made with or without trimming piece on the back. Sizes 32, 34, 36, 38, 40 and 42 bust. Size 36 requires 2¾ yards 36-inch material, with ⅝ yard 18-inch allover lace for shield and standing collar. Price, 15 cents.

5555—Light Coat for Spring Wear—This very stylish coat is gracefully developed in cloth, serge, or any light material. It is made with raglan sleeves. The length of the coat at center-back is 38½ inches. Sizes 14, 18 and 20 years. Size 16 requires 2⅝ yards 54-inch material. Price, 15 cents.

5506—For Afternoon Wear—One of the new styles for spring, is this one-piece dress. It is prettily developed in white serge, with collar and cuffs of contrasting material. Buttons may be added if desired. It is made with a lining, long one-piece sleeves perforated for short sleeves and attached five gored skirt in regulation or shorter length. Length of skirt in front from natural waistline 42, back 44 inches; perforated for 40 inches front, 42 inches back. Width around lower edge about 1¾ yards. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 3⅞ yards 44-inch material with ⅜ yard 18-inch contrasting material for collar and ½ yard 18-inch allover lace for shield and standing collar. Price, 15 cents. Braiding design No. 11,453. Transfer pattern, 15 cents.

5475—Child's One-Piece Frock—This model is one of the smartest of the new fashions designed particularly for little women. In no material does it look better than linen trimmed with embroidered scallops. The dress has a plaited section inserted at lower part of front, high or open neck, long one-piece sleeves perforated for short sleeves and standing or round collar. Sizes 4, 6, 8, 10, 12 and 14 years. Size 8 requires 2⅝ yards 36-inch material. Price, 15 cents.

Embroidery scallop No. 11,661. Transfer pattern, 15 cents.

5494—A Misses' Costume—This very effective one-piece dress is made of blue crepe de chine, trimmed with check silk and buttons. It is built without a lining, it has an adjustable shield with high or V-shaped neck, large collar, perforated for short sleeves, high waistline and attached straight one-piece skirt laid in plaits at the top. Width around lower edge of skirt about 1¼ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 2¼ yards 54-inch material, with ¾ yard 18-inch lace for shield and standing collar. Price, 15 cents.

5472—Lady's Waist—Without lining. Having long one-piece plain sleeves perforated for short sleeves, or having bishop sleeves. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 1¼ yards 54-inch material. Price, 15 cents.

5495—A Morning Frock—A very becoming design to be carried out in eponge, ratine or cotton voile. It is built without a lining and has a standing or flat collar, long one-piece sleeves, and a three-piece skirt. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 7⅛ yards 27-inch material. Price, 15 cents.

5543—A Dainty Design—Dainty dress of white linen. It is made without a lining, having long, one-piece sleeves perforated for short sleeves, and an attached straight one-piece skirt with inverted plaits at center-back, and at each side. Sizes 4, 6, 8, 10, 12 and 14 years. Size 8 requires 3 yards 36-inch material. Price, 15 cents.

Embroidery design No. 11,751. Transfer pattern, 15 cents.

5524—For the School Girl—This model looks very pretty made up in blue serge, having cuffs and collar of red silk. It is made without a lining, having adjustable shield, long one-piece sleeves, perforated for short sleeves and attached five-gored skirt, closing to left of center-front under plait. Sizes 4, 6, 8, 10, 12 and 14 years. Size 8 requires 2⅛ yards 44-inch material with ¾ yard all-over lace 18 inches wide for shield and standing collar. Price, 15 cents.

5501—Smart for Little Girls—Although it is more elaborate than the usual design seen for small girls, this dress is both practical and pretty. It is dainty carried out in soft material trimmed with embroidery. The dress is made without a lining, and has the front and back yoke and upper part of sleeves cut in one piece. High or round neck, long or short sleeves and attached two-piece skirt. Closing in back. Sizes 8, 10, 12 and 14 years. As illustrated, size 8 requires 2½ yards 30-inch material, with 1 yard 18-inch all-over lace. Price, 15 cents.

Embroidery design No. 11,750. Transfer patterns, 15 cents.

5563—A Spring Frock—A new design for afternoon wear carried out in hammered crepe trimmed with cretonne and buttons. It is very pretty in black and white or any two tones of one color. It is made without a lining, having long one-piece puff sleeves perforated for shorter length (which may be omitted) and one-piece cap-sleeves. Adjustable shield perforated for round or C-shaped neck, high waistline and attached one-piece skirt. Lower front edge of skirt may be made straight or rounded. Width around lower edge about 1½ yards. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 4½ yards 44-inch material, ½ yard 18-inch contrasting material for revers, ¾ yard 18-inch lace for shield and standing collar. Price, 15 cents.

When laundrying embroidered pieces, iron smooth on the right side, then lay face down on a thick pad and iron on the wrong side.

Be sure to have plenty of fresh air in your home. Economy in this direction may cost your family severe sickness.

Fresh ink stains may be removed from carpets by an application of salt.

A little salt rubbed on the cups will take off tea stains.

EVERYTHING FOR THE BUILDER

Bargains in Building Material

We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.

Carload Lots a Specialty.

H. McKEVITT & SON

1849 Mission St.
Near 14th St. San Francisco.

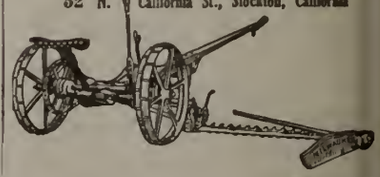
MILWAUKEE Mowers & Rakes

Made particularly for use where heavy cutting is required. The chain drive is the principal reason for the exceptional working qualities of the Milwaukee. No lost motion. The moment the wheels move the knife starts. Wheels are well lugged and there is sufficient weight to furnish abundant tractive power to cut a smooth swath in heavy clover, alfalfa, wild grasses or heavy weeds.

Send for Catalogue

The H. C. Shaw Company

Wholesale Distributers
52 N. California St., Stockton, California



BARGAINS IN RINGS

Take advantage of the parcel post and deal direct.

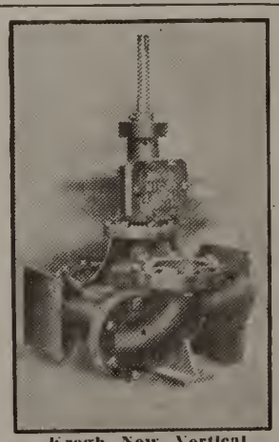
Either of these Solid Gold Signet Rings $3.75. Initials engraved free. Send size with order.

GEO. R. MOSS, Monadnock Bldg., San Francisco.

Reference: Merchants' National Bank, S. F.

M 10

M 30



Krogh New Vertical Water Balanced Pump

KROGH'S NEW VERTICAL PUMP

The Krogh New Water Balanced Vertical Pump contains many new and valuable improvements, same being fully explained in our Bulletin, R-10, which will be mailed upon request.

We have a branch in Los Angeles at 206 N. LOS ANGELES STREET

The pump can be seen in operation at our place of business.

KROGH MANUFACTURING CO.

149 Beale Street, San Francisco

Silk Worms for California

THOSE of us who are interested in silk worm culture and wish to investigate the possibility of successful ilk culture in California are to be iven an opportunity to secure free ilk worms from the University of California at Berkeley. Professor C. V. Woodworth is the author of a ircular making this announcement nd describing the conditions of the est.

Thus far the growing of silk has een unprofitable in this State, says Professor Woodworth. The reason it as not developed here is strictly beause of our economic conditions. The limate in many parts of the State is leal, and silkworms have been grown ere every year in small quantities for hore than a generation. As long as he profits from other industries are arger than those secured in growing ilk, this industry cannot thrive and hould not be encouraged.

Neither the price of silk nor the ost of labor are liable to change nough in the near future to render he growing of silk profitable in this tate if carried on in the usual mander.

The Present Experiment.

There is, however, a possibility that he cost of production can be diminished, as has been done in recent ears in the case of many other agricultural crops. The use of a cheaper ood or the employment of less expensive methods of handling the orms may either of them be sufficient to place the industry on a sound nancial basis.

We are soliciting co-operation in n attempt to solve the first of these roblems, the securing of cheaper ood, by testing as great a range of ood plants as possible. We propose o endeavor to develop silkworms hat will thrive on some plant producing more tons of leaves to the acre nd one cheaper to harvest than the ulberry, which has hitherto been exlusively employed in silk production.

The production of such a race will equire the breeding together of inividuals that have less strongly deeloped the natural repugnance to ther kinds of foliage until, finally, if uccessful, a breed is evolved which ill thrive upon some satisfactory orage crop.

We have secured as great a variety f races of silkworms as we could, and ill test as large a variety of plants as ossible, so as to have a great abundnce of individuals with diverse food eactions from which to select in making our matings. The greater this ariety (and if many co-operate this an be very large) the more probable t would seem that satisfactory races ould arise.

How to Conduct the Experiment.

The care of silkworms is a very imple process that any one can perform. Indeed, in most countries a arge proportion of the work is done y children. When only a few are ept together, practically all the diections that are necessary is that hey be kept supplied with fresh food, nd that which is not eaten be renoved if it does not dry up completey, since the litter should not be permitted to become moldy.

The testing of various food plants onsists simply in offering them a neal of one kind of leaf and then anther, but alternating with mulberry r other known food plant so that the orms will not suffer for lack of ood, and finally when something is ound that they will relish they may e limited to that food and reared to naturity upon it.

The usual practice is to give the orms chopped leaves during the first wo stages, and whole leaves the rest f their life. The number of meals a lay and the rations at each meal, of course, will vary to some slight extent according to the needs of the worms. When it is warmer they may require more food, and when it is cooler, less. The optimum temperature is usually placed at 72 degrees Fahrenheit. If the temperature is a little higher they may come to maturity a little more quickly, and if it is lower they will take distincty longer to mature.

Silkworms are very subject to disease, especially when grown in large numbers, and to prevent this the silkraisers must exercise the utmost care, particularly in the removal of the droppings of the worms and of the uneaten remains of the food. Neglect in these matters usually results in the starting of an epidemic among the worms, showing itself at each molt, but most fatally just as the worms are about ready to spin.

Spinning.

When the insects are fully fed they begin to wander about, cease to feed and become much more transparent in appearance. These are indications of the approach of the spinning time. They must now be provided with places for spinning their cocoons. The practice in Europe is to furnish them with brush cut in the winter from trees and bound together in such a way that they may be set upon the trays in rows, spreading out hedgelike at the top. The worms climb up into these hedges and spin their cocoons between the twigs. A very satisfactory arrangement can be made of lath by laying them edgewise about three-fourths of an inch apart and tacking other laths at right angles across these to hold them in position.

Cost of Electric Heating

By F. J. Rankin.

"How much does it cost to operate an electric iron," and hundreds of similar questions are asked every year of those who are supposed to know something about such matters. You can determine this for yourself from the data stamped on the particular device you are using. For example, a coffee percolator is stamped as follows: "Volts- 110; amperes-4". If your rate for electricity is ten cents per kilowat hour, the cost per hour for operating the above percolator would be 4 cents. For any other rate the cost per hour would be in proportion. In the same way the cost in cents per hour for using any other piece of heating apparatus is approximately its ampere rating, provided the voltage rating does not vary widely from 110. If the voltage rating is in the neighborhood of 220 the cost of operation would be found by multiplying the ampere rating by two.

The fire underwriters require volt and ampere ratings to be plainly stamped on all heating devices, so that they are always available to the user.

—Colorado Agricultural College.

The biggest trouble with the boy on the farm is that he isn't given a fair chance. Make the surroundings as agreeable as possible and not enforce it and the soil will not lack farmers.

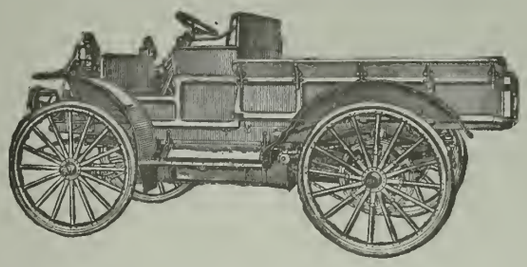
Grease spots may be taken out with weak ammonia in water; lay soft white paper over and iron with a hot iron.

Cheese will not mould so readily if the cut parts are rubbed with butter and covered with greased paper.

Clean your brass bedstead with flannel dipped in kerosene and then polish it with a chamois.

Use borax to remove finger marks from a hardwood door.

International Harvester Motor Trucks



THE I H C LINE
GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Combination,
Peg and Spring-Tooth, and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

"I HAVE used your International motor truck daily over a route eighty miles long, through winter and summer, for the last four years, and have never missed a trip," writes one man.

Service such as this man got would add much to the profits of your fruit business, by handling your fruits rapidly at the right moment, and cutting down your general hauling expenses. An International motor truck would give you such service. Many fruit growers, realizing the advantages and economies to be secured, have long been successfully using the light running, durable International motor truck.

The solid tires cut down tire troubles. The motor is simple and has plenty of power for emergencies. The brakes are safe on any hill. The ignition system is of the best. One lever controls the car. The International is built to save you money.

Let us show you all that an International motor truck will do for you. Drop a card today for catalogues and full information to the

International Harvester Company of America
(Incorporated)
Denver—Helena—Portland—Spokane—Salt Lake City—San Francisco
Champion Deering McCormick Milwaukee Osborne Plano

Louisa M. Alcott's Famous Book

"Little Women"

Now published in a new PLAYERS' EDITION containing 12 illustrations from scenes in the play. Read the book and see the play.

Over One Million Copies of "Little Women" Have Already Been Sold

and this wholesome story of New England family life was never so popular as it is to-day.

Already enshrined among the most delightful of youthful memories, "Little Women" will, in its newest form, make a wider and deeper appeal than ever.—Boston Globe.

Bound in Cloth. 617 pages.
Price $1.50 net; by mail, $1.67

At All Booksellers or the Publishers.

Little, Brown & Co., 34 Beacon St., Boston

Hints for House Cleaning Time

To Clean Painted Walls—Dissolve two ounces of borax in two quarts of water and add one tablespoonful of ammonia. Use half of this quantity to each bucket of water. Do not use soap. Wash a small amount of the painted wall at a time and rub dry with a clean cloth.—Mrs. H. B. K., Oxnard, Cal.

Gasoline for Cleaning—Ordinary gasoline leaves a ring on most fabrics when used to take out spots. To avoid this first wash the gasoline. Put the desired amount of gasoline in a glass jar. Then add soapsuds. Shake the jar rapidly for several minutes, then allow the contents to settle. The soapy water will be dirty. Pour off the gasoline and put in a bottle for use. It will seldom leave a ring when used as a cleaner.—Mrs. C. H. Lindsay.

Cleaning Lamp Chimneys—Never wash a chimney with water unless there is something on it that cannot be removed otherwise. Wipe the chimney well with a dry cloth, then hold it over steam until damp and polish with a soft dry rag. If it has to be washed in water rub with bon ami after washing, then when dry polish with a dry rag. Either way will leave a brilliant shine.—Mrs. W. C., San Lucas.

Removing Dust From Furniture—Dust settles in the creases in furniture and is hard to remove. Dampen a soft rag with coal oil and go over all parts of the furniture, getting down into the creases. You will be surprised at the new, fresh look and how long it is retained.—Mrs. J. L. B., Oleta.

To Renovate Linoleum—A good way to touch up linoleum where the design is worn off is to use floor paint the color of the back ground. A pretty contrast may be used if desired. Paint a place the size of a rug over the worn spot, and stencil a border around it. Then put on a coat of shellac, or linoleum varnish. This will make the linoleum wear longer and will look neat.—Mrs. A. M. Y., Banks, Ore.

To Clean and Polish Furniture—Take benzine and add enough raw linseed oil to give it a canary color. Saturate a soft rag with this polish and rub over the entire surface. Then rub with a dry rag. This is splendid for polishing pianos. It removes finger marks. If the furniture is greasy wash with warm water and pure soap, then polish with this mixture. To clean the brass on furniture rub with a soft rag dampened with spirits of camphor.—Mrs. F. S., Fallon.

To Clean Willow Furniture—Apply salt and water with a brush and rub thoroughly until dry.—Mrs. N. F. G., San Juan Bautista.

Inexpensive Nickel Polish—Put a teaspoonful of whiting in an old dish and mix to a thin paste with kerosene. Apply to nickel parts and let it dry. Then polish with a flannel cloth.—Mrs. F. M. C., Richvale.

To Clean Wall Paper—Rub the soiled spots in wall paper with dough or fresh bread, using a fresh piece when one gets soiled.—Mrs. G. M. M., Sebastopol.

To Clean Carpets—If you do not want to take up your carpet to beat it, sprinkle about half a gallon of damp salt over it and let it stand a while. Then sweep it off with brisk strokes. The carpet will look like new.—M. E., Sand Lake, Oregon.

To Restore Color in Carpets—After cleaning a carpet take a soft cloth and saturate it with turpentine. Rub over the face of the carpet and let it air. This will brighten the colors.—Mrs. H. H. S., Chico.

Cleaning Curtains—When laundrying ecru curtains just try this. Get a package of brown dye and make according to directions. This will make a quart of dye. When you launder the curtains put a little of the dye in the rinsing water. Use enough to give the color desired. The curtains will look like new. This is a good way to change white curtains to ecru if desired.—Mrs. E. D. W., Salem, Ore.

Home Made Linoleum—Two years I was in need of a covering for my dining-room floor, but could not afford to buy linoleum. I had several strips of partly worn and faded rag carpet. I sewed them together, making a carpet the size of the room. This I tacked down tightly. There were one or two places almost worn through. Over these I pasted a stout piece of denim. I then made a thick boiled paste of cheap flour and went over the whole with a brush, rubbing the paste well in. When this was dry I painted it with a good floor paint. I repaint it every six months and each time it is that much thicker and better. It is easily wiped off and is much cleaner than a carpet.

To Remove Soot from Chimneys—Put some scraps of zinc, that can be obtained from the hardware store, in the fire in the stove. Put on a hot bed of coals. This will improve the chimney draught.—Mrs. S. C. C., Berros.

To Black Rusted Stoves—Dissolve one handful of salt in a pint of vinegar and wash the stove with this solution. Wipe dry with a flannel cloth. Put a few drops of turpentine in the blacking and polish the stove in the usual way. This will put a rusty stove in good condition.—Mrs. N. F. G., San Juan Bautista.

To Brighten Linoleum—Dissolve a handful of best glue in a pail of water and sponge the linoleum with it. If done at night it will be dry in the morning. This gives a nice gloss and protects the linoleum from wearing.—Mrs. F. S., Fallon.

Soap for Carpets—Shred finely half an ounce of candle wax—old candle ends can be used—and dissolve in a pint of boiling water, to which a tablespoonful of ammonia and a lump of washing soda the size of a walnut have been added. The soap is ready to use as soon as cool enough to be handled. This soap can be used as a suds to clean rugs.—Mrs. H. B. K., Oxnard.

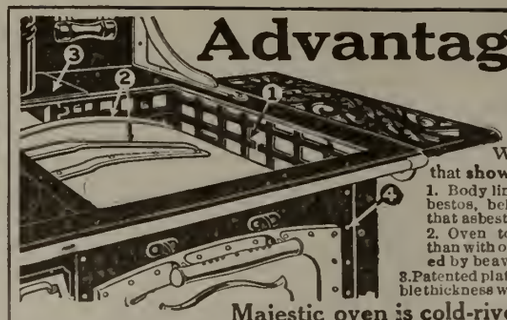
To Make Windows Shine—When next you clean windows put a teaspoonful of kerosene in a basin of warm water. Have three soft cloths preferably cheese cloth. Dip a small one in the kerosene and water and wipe the windows. Rub dry immediately with a larger cloth and polish with the third cloth. This will make the glass beautifully clear. Use no soap, as this gives a cloudy effect.

The kerosene and warm water wash is the best way to clean the wood work of the house. It does not mar the varnish.—Mrs. D. H. S., Philomath, Ore.

Polish for Furniture—An excellent polish for furniture may be made as follows: One cup of linseed oil, one cup of turpentine and one-fourth cup of vinegar. Mix thoroughly. Apply with a cloth and rub dry.—Mrs. F. P. S., Biggs.

Death to Insects—Use plenty of turpentine, or carbolic acid, in the scrub water for the floors. It means death to insects hidden in the cracks.—Mrs. J. L., Birds Landing.

To Remove Match Marks—Marks on kitchen walls which have been caused by carelessly striking matches on them will disappear if rubbed with a bit of lemon and then with a clean cloth dipped in whiting. Afterwards wash the surface with warm water and soap, then wipe with a clean cloth.—Mrs. A. C. S., Riddle, Ore.



Advantages that show!

When you see the advantages that show in a Majestic, you'll want it!
1. Body lined with extra heavy, pure asbestos, held in place by open grating so that asbestos can reflect heat onto oven.
2. Oven top curved—heat hugs closer than with ordinary square top, and is braced by heavy bolted beam.
3. Patented plate around base of pipe adds double thickness where ordinary stoves are weak.

Majestic oven is cold-riveted

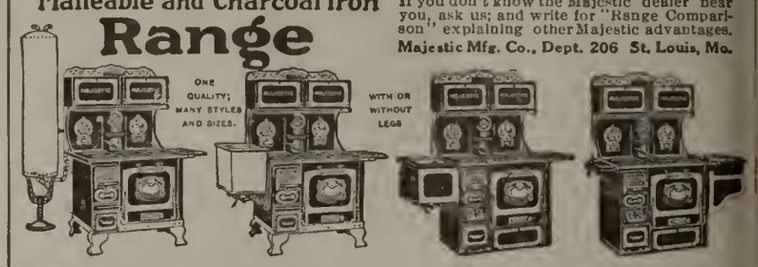
(4) to heavy L-shaped frame of malleable iron—iron that can't break. Heat can't escape; stays tight and bakes right always. Partition in bottom flue guides heat to front of oven; no need to turn bread in a Majestic. Ordinary ranges of cast iron or steel, can't be cold-riveted because hammer blows break cast metal. Such ovens are bolted loosely to thin body metal, without oven frame. This leaves cracks that must be filled with putty, which soon falls out, allowing heat to escape. The hotter fire then required buckles the unbraced oven and burns out the range. **Other Majestic advantages:** Hot water movable reservoir of pure, nickeled copper Pocket pressed from one seamless piece—can't leak. When water boils, reservoir and frame can be moved away from fire by shifting lever No wear on bottom of reservoir. (Flush top reservoirs have aluminum top.) Unbreakable iron braces on oven door. Oven rack slides out easily and stays rigid and level under heavy weight. Cup catches falling ashes when emptying pan. Open end ash pan scoops up ashes inside as you slide it in. Ventilation under pan—floor can't scorch. These Majestic advantages show; but quality only shows with use. Majestics are made entirely of malleable and charcoal iron. Charcoal iron looks like ordinary iron or steel but resists rust three times as long. That's why you can't judge quality by actual appearance, much less by pictures. The Majestic Reputation should be your guide.

The men-folks won't use worn out farm machinery Why should you "get along" with an old cookstove that wastes fuel, ruins baking and requires frequent repairs? A new range would save its cost; but get a good one. A cheap range is never cheap. A Majestic Range always requires less fuel and repairs, bakes best and outwears 3 ordinary ranges. See the Majestic before you buy any. Majestic dealers are in every county of 40 States.

If you don't know the Majestic dealer near you, ask us; and write for "Range Comparison" explaining other Majestic advantages.

Majestic Mfg. Co., Dept. 206 St. Louis, Mo.

Great Majestic
Malleable and Charcoal Iron Range



Sale of Army and Navy Goods
DIRECT FROM U. S. WAR DEPT.

Blankets from $2.00 to $5.00; Navy Blue Shirts, $1.75; Olive Drab Army Shirts, $2.50; Khaki Army Shirts, $1.00; Army Wool Socks, 25c pair; U. S. Knapsacks, 75c; U. S. Canteens, 40c; U. S. Rifles, $2.50; Mess Kits, 35c; Shelter Tents, $1.25. Other U. S. Army Goods to interest and please everybody.
Send for Free Catalogue. Mail Orders Promptly Filled.
SPIRO HARNESS CO., 307 Market St., San Francisco, Cal.

Koveralls Keep Kids Kleen
Practical Healthful, Economical Garments for Small Children

Practical. Because they are made in one piece, and can be slipped on or off instantly. They fit and look well, and yet are loose and comfortable in every part.
Healthful. Far superior to bloomers. No tight elastic bands to stop free circulation of blood and retard freedom of motion.
Economical. Saving wear on good clothes—saving washing—so well made they are outgrown long before they are worn out.

Ask Your Dealer For **KOVERALLS**
ALL RIGHTS RESERVED

Made in high neck with long sleeves, or Dutch neck and elbow sleeves. Made of blue denim, or blue and white hickory stripes for all the year wear, and in a variety of lighter weight materials for summer wear. All garments trimmed with fast-color red or blue galatea. Sizes 1 to 8 years.

75c the suit A new suit FREE if it rips Awarded Gold Medal at Mechanics' Fair 1913

If your dealer cannot supply you, we will send them, charges prepaid, on receipt of price, 75c each.

Made By
LEVI STRAUSS & CO., San Francisco

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.
Largest pipe works in the West.
WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

Rhubarb for Profit
A FREE BOOK ON
Rhubarb Culture
Free for the asking; $1,000 profit. Now best time to plant.
J. B. Wagner, Pasadena, Cal.
The Rhubarb, Berry and Cactus Specialist

THE BANDBOX

—By Louis Joseph Vance—

CHAPTER XVI

Ninety Minutes.

OMMANDEERING Alison's taxi-cab with the promise of an extra , Staff jumped in and shut the door. s they swung into Fourth avenue, he ught a glimpse of Ismay's slight ure standing on the corner, his pose pressive of indecision and uncer-nty; and Staff smiled to himself, rmising that it was there that the ief had left his motor-car to be con-cated by Iff.

Three blocks north on Fourth ave-e, and they swung west into Thirty-ird street; a short course quickly vered, but yet not swiftly enough to tpace Staff's impatience. He had e door open, his foot on the step, fore the taxicab had begun to slow wn preparatory to stopping beside e car waiting in the shadow of the g hotel.

Iff was in the tonneau, gesticulating patiently; the chauffeur had already anked up and was sliding into his at. As the taxicab rolled alongside, aff jumped, thrust double the amount gistered by the meter into the iver's hand, and sprang into the dy of Ismay's car. Iff snapped the or shut; as though set in motion by at sharp sound, the machine began move smoothly and smartly, gath-ing momentum with every revolu-n of its wheels. They were cross-g Madison almost before Staff had ttled into his seat. A moment later cy were snoring up Fifth avenue.

Staff looked at his watch. "Ten," told Iff.

"We'll make time once we get clear this island," said the little man xiously; "we've got to."

"Why?"

"To beat Ismay—"

Staff checked him with a hand on s arm and a warning glance at the ck of the chauffeur's head.

"Oh, that's all right now," Iff told m placidly. "I thought we might's ell understand one another first as st; so, while we were waiting for u, I slipped him fifty, gave him to derstand that my affectionate cousin d about come to the end of his rope d—won his heart and confidence. 's a way I have with people; they seem to fall for me," he asserted ith insufferable self-complacence.

He continued to impart his pur-ased information to Staff by snatch-all the way from Thirty-fourth reet to the Harlem river.

"He's a decent sort," he said, indi-ting the operator with a nod; "ap-rently, that is; name, Spelvin. Em-oyed by a garage upon the West de, in the Seventies. Says Ismay ng 'em up about half-past two last ght, chartered this car and driver, be kept waiting for him whenever called for it. . . . Coarse work at, for Cousin Arbuthnot—very, ry crude. . . .

"Still, he'd just got home and dn't had time to make very polished rangements. . . . Seems he told is chap he was to see nothing but e road, hear nothing but the motor, y nothing whatever to nobody. Gave m a fifty, too. That habit seems to n in the family. . . .

"He called for the car around 5 clock, with Nelly. Spelvin says she emed worn out, hardly conscious of hat was going on. They lit out for where we're bound: place on the onnecticut shore called Pennymint oint. On the way Ismay told him stop at a roadhouse, got out and ought Nelly a drink. Spelvin says wouldn't be surprised if it was ped; she slept all the rest of the ay and hardly woke up even when ey helped her aboard the boat."

"Boat!"

"Motor-boat. I infer that Cousin Arbuthnot has established headquarters on a little two-by-four island in the Sound—Wreck Island. Used to be run as a one-horse summer resort—hotel and all that. Went under several years ago, if mem'ry serveth me aright. Anyhow, they loaded Nelly aboard this motor-boat and took her across. . . .

"Spelvin was told to wait. He did. In about an hour—boat back; native running it hands Spelvin a note, tells him to run up to Hartford and post it and be back at 7 p. m. Spelvin back at 7; Ismay comes across by boat, is driven to town. . . .

"That's all, to date. Spelvin had begun to suspect there was something crooked going on, which made him easy meat for my insidious advances. Says he was wondering if he hadn't better tell his troubles to a cop. All of which goes to show that Cousin Artie's fast going to seed. Very crude operating—man of his reputation, too. Makes me almost ashamed of the relationship."

"How are we going to get to Wreck Island from Pennymint Point?"

"Same boat," said Iff confidently. "Spelvin heard Ismay tell his engineer to wait for him—would be back between midnight and 3."

"He can't beat us there, can he, by any chance?"

"He can if he humps himself. This is a pretty good car, and Spelvin says there isn't going to be any car on the road to-night that'll pass us; but I can't forget that dear old New York, New Haven & Hartford. They run some fast trains by night, and while of course none of them stops at Pennymint Center—station for the Point—still, a man with plenty of money to fling around can get a whole lot of courtesy out of a railroad."

"Then the question is: can he catch a train which passes through Pennymint Center before we can reasonably expect to get there?"

"That's the intelligent query. I don't know. Do you?"

"No—"

"Spelvin doesn't, and we haven't got any time to waste trying to find out. Probabilities are, there is. The only thing to do is to run for it and trust to luck. Spelvin says it took him an hour and thirty-five minutes to run in, this evening; and he's going to better that if nothing happens. Did you remember to bring a gun?"

"Two." Staff produced the pistol he had taken from Ismay, with the extra clips, and gave them to the little man with an account of how he had become possessed of them—a narrative which Iff seemed to enjoy immensely.

"Oh, we can't lose," he chuckled; "not when Cousin Artie plays his hand as poorly as he has this deal. I've got a perfectly sound hunch that we'll win."

Staff hardly shared his confidence; still, as far as he could judge, the odds were even. Ismay might beat them to Pennymint Center by train, and might not. If he did, however, it could not be by more than a slight margin; to balance which fact, Staff had to remind himself that two minutes' margin was all that would be required to get the boat away from land, beyond their reach.

"Look here," he put it to Iff: "suppose he does beat us to that boat?"

"Then we'll have to find another."

"There'll be another handy, all ready for us, I presume?"

"Spare me your sarcasm," pleaded Iff; "it is, if you don't mind my mentioning the fact, not your forte. Silence, on the other hand, suits your style cunningly. So shut up and lemme think."

He relapsed into profound meditations, while the car hummed onwards through the moon-drenched spaces of the night.

Presently he roused and, without warning, clambered over the back of the seat into the place beside the chauffeur. For a time the two conferred, heads together, their words indistinguishable in the sweep of air. Then, in the same spry fashion, the little man returned.

"Spelvin's a treasure," he announced, settling into his place.

"Why?"

"Knows the country—knows a man in Barmouth who runs a shipyard, owns and hires out motor-boats, and all that sort of thing."

"Where's Barmouth?"

"Four miles this side of Pennymint Point. Now we've got to decide whether to hold on and run our chances of picking up Ismay's boat, or turn off to Barmouth and run our chances of finding chauffeur's friend with boat disengaged. What do you think?"

"Barmouth," Staff decided after some deliberation but not without misgivings.

"That's what I told Spelvin," observed Iff. "It's a gamble either way."

The city was now well behind them, the car pounding steadily on through Westchester. For a long time neither spoke. The time for talk, indeed, was past—and in the future; for the present they must tune themselves up to action—such action as the furious onrush of the powerful car in some measure typified, easing the impatience in their hearts.

For a time the road held them near railroad tracks. A train hurtled past them, running eastwards: a roaring streak of orange light crashing through the world of cool night blues and purple-blacks.

The chauffeur swore audibly and let out another notch of speed.

Staff sat spellbound by the amazing romance of it all. . . . A bare eight days since that afternoon when a whim, born of a love now lifeless, had stirred him out of his solitary, work-a-day life in London, had lifted him out of the ordered security of the center of the world's civilization, and sent him whirling dizzily across three thousand miles and more to become a partner in this wild, weird ride to the rescue of a damsel in distress and durance vile! Incredible! . . .

Eight days: and the sun of Alison, that once he had thought to be the light of all the world, had set; while in the evening sky the star of Eleanor was rising and blazing ever more brightly. . . .

Now when a man begins to think about himself and his heart in such poetic imagery, the need for human intercourse grows imperative on his understanding; he must talk or—suffer severely.

Staff turned upon his defenseless companion.

"Iff," said he, "when a man's the sort of a man who can fall out of love and in again—with another woman, of course—inside a week—what do you call him?"

"Human," announced Iff after mature consideration of the problem.

This was unsatisfactory; Staff yearned to be called fickle.

"Human? How's that?" he insisted.

"I mean that the human man hasn't got much to say about falling in or out of love. The women take care of all that for him. Look at your Miss Landis—yours as was. . . . You don't mind my buttin' in?"

"Go on," said Staff grimly.

"Anybody with half an eye, always excepting you, could see she's made up her mind to hook that Arkroyd pinhead on account of his money. She was just waiting for a fair chance to give you the office—preferably, of course, after she'd nailed that play of yours."

"Well," said Staff, "she's lost that, too."

"Serves you both right."

"There was a pause wherein Staff sought to fathom the meaning of that last utterance of Mr. Iff's.

"I take it," resumed the latter with a sidelong look—"pardon a father's feelings of delicacy—I take it, you're meaning Nelly?"

"How did you guess that?" demanded Staff, startled.

"Right, eh?"

"Yes—no—I don't know—"

"Well, if you don't know the answer any better'n that, take a word of advice from an old bird: you get her to tell you. She's known it ever since she laid eyes on you."

"You mean she—I—" Staff stammered eagerly.

"I mean nobody knows anything about a woman's heart but herself; but she knows it backwards and all the time."

"Then you don't think I've got any show?"

"Oh, Lord!" complained Iff. "Honest, you gimme a pain. Go on and do your own thinking."

Staff subsided, imaging a vain thing: that the mantle of dignity in which he wrapped himself successfully cloaked his sense of injury. Iff smiled a meaningless smile up at the inscrutable skies. And the moonlit miles slipped beneath the wheels like a torrent of molten silver.

At length—it seemed as if many hours must have swung crashing into eternity since they had left New York—Staff was conscious of a perceptible diminution of speed; he was able to get his breath with less effort, had no longer to snatch it by main strength from the greedy clutches of the whirlwind. The reeling chiaroscuro of the country side seemed suddenly to become calm, settling into an intelligible, more or less orderly arrangement of shining hills and shadowed hollows, spreading pastures and somber woodlands. The chauffeur flung a few inarticulate words over his shoulder—readily interpreted as announcing the nearness of their destination; and of a sudden the car swung from the main highway into a narrow by-road that ran off to the right. A little later they darted through a cut beneath railroad tracks, and a village sprang out of the night and rattled past them, serenely slumbrous. From this center a thin trickle of dwellings straggled along their way. Across fields to the left, Staff caught glimpses of a spreading sheet of water, still and silvery-gray. . . .

On a long slant, the road drew nearer and more near to the shores of this arm of the Sound. Presently a group of small buildings near the head of a long landing-stage swam into view. Before them the car drew up with a sigh. The chauffeur jumped down and ran across the road to a house in whose lower story a lighted window was visible. While he hammered at the door, Staff and Iff alighted. A man in his shirt-sleeves came to the door of the cottage and stood there, pipe in mouth, hands in pockets, languidly interjecting dispassionate responses into the chauffeur's animated exposition of their case. As Staff and Iff came up, Spelvin turned to them, excitedly waving his gauntlets.

"He's got a boat, all right, and a good one he says, but he won't move a foot for less'n twenty dollars."

"Give you twenty-five if you get away from the dock within five min-

utes." Iff told the boatbuilder directly.

The man started as if stung. "Jemima!" he breathed, incredulous. Then caution prompted him to extend a calloused and work-warped hand. "Cross my palm," he said.

"You give it to him, Staff," said Iff magnificently. "I'm short of cash."

Obediently, Staff disbursed the required sum. The native thumbed it, pocketed it, lifted his coat from a nail behind the door and started across the road in a single movement.

"You come 'long, Spelvin," he said in passing, " 'nd help with the boat. If you gents 'll get out on the dock I'll have her alongside in three minutes, 'r my name ain't Bascom."

Pursued by the chauffeur, he disappeared into the huddle of boathouses and beached and careened boats. A moment later, Iff and Staff, picking their way through the tangle, heard the scrape of a flat bottomed boat on the beach and, subsequently, splashing oars.

By the time they had reached the end of the dock, the boatbuilder and his companion were scrambling aboard a twenty-five-foot boat at anchor in the midst of a small fleet of sail and gasoline craft. The rumble of a motor followed almost instantly, was silenced momentarily while the skiff was being made fast to the mooring, broke out again as the larger boat selected a serpentine path through the circumjacent vessels and slipped up to the dock.

Before it had lost way, Iff and Staff were aboard. Instantly, Bascom snapped the switch shut and the motor started again on the spark.

"Straight out," he instructed Spelvin at the wheel, "till you round that white moorin'-dolphin. Then I'll take her." . . .

Not long afterward he gave up pottering round the engine and went forward, relieving Spelvin. "You go back and keep your eye on that engyne," he ordered; "she's workin' like a sewin'-machine, but she wants watchin'. I'll tell you when to give her the spark. Meanwhile you might's well dig them lights out of the port locker and set 'em out."

"No," Iff put in. "We want no lights."

"Gov'mint regulations," said Bascom stubbornly. "Must carry lights."

"Five dollars?" Iff argued persuasively.

"Agin the law," growled Bascom. "But—I dunno—they ain't anybody likely to be out this time 'o night. Cross my palm."

And Staff again disbursed.

The white mooring-buoy swam past and the little vessel heeled as Bascom swung her sharply to the southwards.

"Now," he told Spelvin, "advance that spark all you've a mind to."

There was a click from the engine-pit and the steady rumble of the exhaust ran suddenly into a prolonged whining drone. The boat jumped as if jerked forward by some gigantic, invisible hand. Beneath the bows the water parted with a crisp sound like tearing paper. Long ripples widened away from the sides, like ribs of a huge fan. A glassy hillock of water sprang up mysteriously astern, pursuing them like an avenging Nemesis, yet never quite catching up.

The sense of irresistible speed was tremendous, as stimulating as electricity; this in spite of the fact that the boat was at best making about half the speed at which the motor car had plunged along the country roads; an effect in part due to the spacious illusion of moonlit distances upon the water.

Staff held his cap with one hand, drinking in the keen salt air with a feeling of strange exultation. Iff crept forward and tarried for a time talking to the boat-builder.

The boat shaved a nun-buoy outside Barmouth Point so closely that Staff could almost have touched it by stretching out his arm. Then she straightened out like a greyhound on a long course across the placid silver reaches to a goal as yet invisible

Iff returned to the younger man's side.

"Twenty miles an hour, Bascom claims," he shouted "At that rate we ought to be there in about fifteen minutes now."

Staff nodded, wondering what they would find on Wreck Island, bitterly repenting the oversight which had resulted in Ismay's escape from his grasp. If only he had not been so sure of his conquest of the little criminal . . . ! Now his mind crawled with apprehensions bred of his knowledge of the man's amazing fund of resource. He who outwitted Ismay would have earned the right to plume himself upon his cunning. . . .

When he looked up from his abstraction, the loom of the mainland was seemingly very distant. The motorboat was nearing the center of a deep indentation in the littoral. And suddenly it was as though they did not move at all, as if all this noise and labor went for nothing, as if the boat were chained to the center of a spreading disk of silver, world-wide, illimitable, and made no progress for all its thrashing and its fury.

Only the unending sweep of wind across his face denied that effect. . .

Iff touched his arm.

"There. . . ." he said, pointing.

Over the bows a dark mass seemed to have separated itself from the shadowed mainland, with which it had till then been merged. A strip of silver lay between the two, and while they watched it widened, swiftly winning breadth and bulk as the motorboat swung to the north of the long, sandy spit at the western end of Wreck Island.

"See anything of another boat?" Iff asked. "You look—your eyes are younger than mine."

Staff stood up, steadying himself with feet wide apart, and stared beneath his hand.

"No," he said; "I see no boat"

"We've beaten him, then!" Iff declared joyfully.

But they hadn't, nor were they long in finding it out. For presently the little island lay black, a ragged shadow against the blue-grey sky, upon the starboard beam; and Bascom passed the word aft to shut off the motor. As its voice ceased, the boat shot in toward the land, and the long thin moonlit line of the landing stage detached itself from the general obscurity and ran out to meet them. And so closely had Bascom calculated that the "shoot" of the boat brought them to a standstill at the end of the structure without a jar. Bascom jumped out with the headwarp, Staff and Iff at his heels.

From the other side of the dock a shadow uplifted itself, swiftly and silently as a wraith, and stood swaying as it saluted them with profound courtesy.

"Gennelmen," it said thickly, "i bidsh you welcome t' Wrecksh Island."

With this it slumped incontinently back into a motorboat which lay moored in the shadow of the dock; and a wild, ecstatic snore rang out upon the calm night air.

"Thet's Eph Clover," said Bascom; "him 'nd his wife's caretaker here. He's drunker 'n a b'iled owl," added the boatbuilder lest they misconstrue.

"Cousin Artie seems unfortunate in his choice of minions, what?" commented Iff. "Come along Staff. . . Take care of that souse, will you, Spelvin? See that he doesn't try to mix in."

They began to run along the narrow, yielding and swaying bridge of planks.

"He hasn't beaten us out yet," Iff threw over his shoulder. "You keep back now—like a good child—please. I've got a hunch this is my hour."

The hotel loomed before them,

Care of Screw Driver

Almost everyone uses the screw driver more or less, yet how seldom, even among mechanics, do we find it properly ground. To be sure its uses for all purposes from that of a can opener, a clam hammer to that of a crow bar precludes the point being ground in the form to best serve its real purpose, that of driving screws. If neat work and good smooth heads for the screws, when in place, are desired, then grind the screw driver bit square across the end with sides flat and parallel back a distance equal to the depth of slot in the size screw to which the driver is adapted. This leaves the edge somewhat weaker than the old wedge shaped end so commonly used. However, if the bit is made of good tool steel properly tempered, it will give much better service with much less effort required.—A. Cammack, Colorado Agricultural College.

The Vermorel Sulphur Spraying Machine

The Most Effective Machine Ever Made For Grape Vine Spraying

The following extract from a testimonial speaks louder than a hundred arguments:

"In reply to your favor of October 12th, regarding our tests of the Vermorel Torpille Sulphur Machine, I will say that it has given us very good results. We have been able by means of this machine to sulphur the vines in the most satisfactory manner with a much smaller amount of sulphur than with any other machine we have tested.

(Signed) FRED T. BIOLETTI,
Professor, University of California, Berkeley.

Write now for literature and testimonials about this spray.

The H. C. Shaw Company
Wholesale Distributers
52 N. California St., Stockton, California

Put Your Boy in Overalls

Let him play outdoors with his playmates. Let him romp and play. No need to tell him to be careful of his clothes.

Get Him Two-Horse Brand Overalls

The kind that can't possibly be ripped, that are constructed for absolute comfort and freedom of motion. Even if they do get soiled they are easily washed.

A New Pair FREE If They Rip

Made By
LEVI STRAUSS & CO., San Francisco

Among the Scenic Wonders of America

THOSE OF THE

Rocky and Sierra Mountains

STAND FORTH PRE-EMINENT

Marvelous Scenic Attractions seen from the car window without extra expense for side trips:

Pikes Peak
Royal Gorge
Grand Canyon of the Arkansas
Collegiate Peaks
Mount Massive
Tennessee Pass
Eagle River Canyon
Canyon of the Grand River
Glenwood Springs
Castle Gate
Salt Lake City
Great Salt Lake
Glistening Beds of Salt
Mirage Land
Pilot Mountain
Grand Canyon of the Feather River

WESTERN PACIFIC
DENVER & RIO GRANDE

Illustrated booklets, descriptive of "The Scenic Route to the East," free on request.

E. L. LOMAX
Asst. Pass. Traffic Manager
San Francisco, Cal.

FRANK A. WADLEIGH
Passenger Traffic Manager
Denver, Colo.

bles gray with moonshine, its long ls dark save where, toward the ddle of the main structure, chinks light filtered through a shuttered ndow, and where at one end an en door let out a shaft of lamp-ht upon the shadows. . . .

CHAPTER XVII.

Holocaust.

OR a period of perhaps twenty seconds the man and the girl re-aintained moveless, eyeing one an-her; she on the floor, pale, stunned d pitiful, for the instant bereft of ery sense save that of terror; he is e doorway, alert, fully the master of s concentrated faculties, swayed by o emotions only—a malignant tem-r bred of the night's succession of verses capped by the drunkenness his caretaker, and an equally ma-nant sense of triumph that he had turned in time to crush the girl's empt to escape.

He threw the door wide open and ok a step into the room, putting ay his pistol.

"So——," he began in a cutting ice.

But his movement had acted as the ock needed to rouse the girl out of r stupor of despair. With a cry e gathered herself together and mped to her feet. He put forth a nd as if to catch her, and she leaped ck. Her skirts swept the lamp on e floor and overturned it with a lintering crash. Instinctively she rang away—in the nick of time.

She caught a look of surprise and ght in the eyes of the man as they hred past her in the ghastly glow the flickering wick, and took ad-ntage of this momentary distrac-n to leap past him. As she did there was a slight explosion. A eet of flaming kerosene spread over e floor and licked the chairboard-g.

Ismay jumped back, mouthing rses; the girl had already slipped t of the room. Turning, he saw r flying through the hall toward the ain door. In a fit of futile, child-h spite, unreasonable and unreason-g, he whipped out his pistol and nt a bullet after her.

She heard it whine near her head d crash through the glass panes of e door. And she heard herself cry t in a strange voice. The next in-nt she had flung open the door d thrown herself out, across the randa and down the steps. Then rning blindly to the left, instinct iding her to seek temporary safety hiding in the wilderness of the nes, she blundered into somebody's ms.

She was caught and held fast de-ite her struggle to free herself; to uich, believing herself to be in the nds of Mrs. Clover or her husband, e gave all her strength.

At the same time the first-floor ndows of the hotel were illumined an infernal glare. All round her ere was lurid light, setting every-ing in sharp relief. The face of the an who held her was suddenly re-aled; and it was her father. . . . e had left him inside the building d now . . . She was assailed th a terrifying fear that she had ne mad. In a frenzy she wrenched rself free; but only to be caught in her arms.

A voice she knew said soothingly: here, Miss Searle—you're all right w. . . ."

Staff's voice and, when she twisted look, Staff's face, friendly and re-suring!

"Don't be afraid," he was saying; 'll take care of you now—your ther and I."

"My father!" she gasped. "My ther is in there!"

"No," said Iff at her side. "Believe e, he isn't. That, dear, is your fondly ectionate Uncle Arbuthnot—and tween the several of us I don't mind telling you that he's stood in my shoes for the last time."

"But I don't," she stammered—"I don't understand—"

"You will in a minute," Staff told her gently. At the same time he lifted his voice. "Look out, Iff—look out!"

He strove to put himself between the girl and danger, making a shield of his body. But with a supple movement she eluded him.

She saw in the doorway of the burning house the man she had thought to be her father. The other man, he whose daughter she really was, had started to run toward the veranda steps. The man in the doorway flung up his hand and, clear and vicious above the crackling of the flames, she heard the short song of a Colt automatic—six shots, so close upon one another that they were as one prolonged.

There was a spatter of bullets in the sandy ground about them; and then, with scarcely an appreciable interval, a second flutter of an automatic. This time the reports came from the pistol in Iff's hand. He was standing in full glare at the bottom of the veranda steps, aiming with great composure and precision.

The figure in the doorway reeled as if struck by an axe, swung half-way round and tottered back into the house. The little man below the veranda steps delayed only long enough to pluck out the empty clip from the butt of his pistol and slip another, loaded, into its place. Then with cat-like agility he sprang up the steps and dived into the furnace-like interior of the hotel. A third stuttering series of reports saluted this action, and then there was a short pause ended by a single shot.

"Come," said Staff. He took her arm gently. "Come away. . . ."

Shuddering, she suffered him to lead her a little distance into the dunes. Here he released her.

"If you won't mind being left alone a few minutes," he said, "I'll go back and see what's happened. You'll be perfectly safe here, I fancy."

"Please," she said breathlessly—"do go. Yes, please."

She urged him with frantic gestures. . . .

He hurried back to the front of the hotel. By now it was burning like a bonfire; already, short as had been the time since the overturning of the lamp, the entire ground floor with the exception of one wing was a roaring welter of flames, while the fire had leaped up the main staircase and set its signals in the windows of the upper story.

Iff was standing at some distance from the main entrance, having pushed his way through the tangle of undergrowth to escape the scorching heat that emanated from the building. He caught sight of Staff approaching and waved a hand to him.

"Greetings!" he cried cheerfully, raising his voice to make it heard above the voice of the conflagration. "Where's Nelly?"

Staff explained. "But what about Ismay?" he demanded.

Iff grinned and hung his head as if embarrassed, rubbing a handkerchief over the smoke-stained fingers of his right hand.

"I got him," he said simply.

"You left him in there?"

The little man nodded without reply and turned alertly to engage Mrs. Clover, who was bearing down upon them in the first stages of hysterics. But at sight of Iff she pulled up and calmed herself a trifle.

"Oh, sir," she cried, "I'm so glad you're safe, sir! I was asleep in the kitchen when the fire broke out—and then I thought I heard pistol shots—and I didn't know but somethin' had happened to you—"

"No," said Iff coolly; "you can see I'm all right."

"And Eph, sir? Where's my husband?" she shrieked.

"Oh," said Iff, at length identifying the woman. "You'll find him down at the dock—dead drunk in the motorboat," he told her. "If I were you I'd go to him right away."

"But whatever will we do for a place to sleep to-night?"

"Help yourself," Iff replied with a generous wave of his hand. "You've all Pennymint to ask shelter of, if you can manage to make your husband run the boat across."

"But you—what'll you do?"

"I've another boat handy," Iff explained. "We'll go in that."

"And will you rebuild, sir?"

"No," he said gravely, "I don't think so. I fancy this is the last time I'll ever set foot on Wreck Island. Now clear out," he added with a sharp change of manner, "and see if you can't sober that drunken fool up."

Abashed, the woman cringed and turned away. Presently she broke into a clumsy run and vanished in the direction of the landing-stage.

"You've accepted the identity of Ismay," commented Staff disapprovingly, as they moved off together to rejoin Eleanor.

"For the last time," said the little man. "Until I get aboard Bascom's boat again, only. It's the easiest way."

"How do you mean?"

Iff nodded at the blazing building. "That wipes out all scores," he replied. "What they find of Cousin Artie when that cools off won't be enough to hold an inquest over; he will be simply thought to have disappeared, since I won't return to this place. And that's the easiest way; we don't got any use for inquests at the wind-up of this giddy dime novel!"

The light of the great fire illumined not only all the island but the waters for miles around. As Bascom's boat drew away, its owner called Staff's attention to a covey of sails, glowing pink against the dark background of the mainland as they stood across the arm of the Sound for the island.

"Neighbors," said Mr. Bascom; "comin' for to see if they can lend a hand or snatch a souvenir or so, mebbe."

Staff nodded, with little interest. Out of the corners of his eyes he could see Iff and his daughter, on the opposite side of the boat. Iff was talking to her in a gentle, subdued voice strangely unlike his customary acrid method of expression. He had an arm round his daughter's shoulders; her head rested on his. . . . .

Staff looked away, back at the shining island. He could not grudge the little man his hour. His own would come, in time. . . .

THE END.

Unfortunately, the name of the writer of this classic has been lost:

Mule in the barnyard,
Lazy and sleek;
Boy with a pin on the end of a stick
Creeps up behind him quiet as a mouse—
Crepe on the door of the little boy's house.

A patent medicine advertisement shouts, "What's indigestion? Who Cares? Listen." If somebody really wants to know, we gladly supply the information that indigestion is AWFUL, and that we, for one, care, but we'll be hanged if we'll listen to anybody who advises taking forty-seven bottles of herb juice for it.

Mother—Herbert, you mustn't ask your papa so many questions. They irritate him.

Herbert (shaking his head)—It ain't the questions, ma; it's the answers he can't give that makes him sore!"

A Missouri paper favors government ownership of beefsteak and eggs. The only objection to this, that we can see, is that it would take the entire army and navy to guard so much wealth.

KODAKS
and
SUPPLIES
also
DEVELOPING
Printing
Enlarging

We develop any roll of films:
Six Exposures 10c
10 or 12 Exposures, 15c

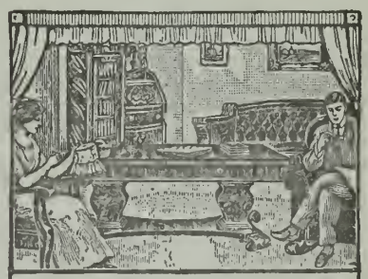
GOOD RESULTS

That's what you were after when you "snapped" that roll of films—that's your business. But that isn't all—they must be properly developed and printed—that's my business.

Let me develop the next roll.

GEO. E. KNOX
"THE KODAK MAN"
807 K Street
SACRAMENTO, CAL.

Mail this Ad and two negatives—we will make pictures free. Mail your orders. Catalog Free.



Friedman's Will Furnish Your Home on Credit

Furniture Rugs Carpets
Curtains Stoves Refrigerators
Everything for the home.

TAKE A YEAR TO PAY

No red tape to open an account. We trust you wherever you live. You keep the goods a month before deciding to buy. Any article you are not pleased with can be returned and we will pay freight both ways. Mail us a postal with your name and address TODAY and get your copy of our

Big Free Catalogue

This splendid book shows you EVERYTHING for the home, including a big and attractive assortment of

Carpets—Rugs—Draperies

in colors, patterns and designs photographed from the original goods.

Get This Catalogue

and bring the choicest, biggest, handsomest stock of home furnishings—right TO YOU—to choose from. Do your shopping right at home around the evening lamp. This book is a necessity to every Home-Lover on the Pacific Coast.

WRITE FOR IT TODAY

M. FRIEDMAN & CO.
261 Post Street San Francisco, Cal.

For 25 Cents—

We will send postpaid, seven 5c packets of seed put up FRESH in our store. Your selection.
Buy your bulk seed from us. "Seeds at Low Price and no Price can buy better."

WEST COAST SEED HOUSE,
116-118 E. 7th St., Los Angeles, Cal.

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted FREE
Watson E. Coleman, Patent Lawyer, Wash., D. C.

Suggestions for Cake Making

IN spite of the fact that cake-making is perhaps the most intricate branch of cookery, almost invariably the novice cook chooses this for her initial experience.

Cakes are divided into two general classes—those with butter and those without. To the former class belongs the great majority of cakes such as cup and pound; to the latter class belongs sponge and angel food. These cakes differ not only in their ingredients but also in the manner of combining these ingredients.

Success in cake making depends on four things. First, the ingredients used; second, careful measuring and combining; third, pans and baking utensils used; fourth, regulating the oven during the baking process.

With regard to the ingredients for cakes we all know the old adage that you can't make a silk purse from a sow's ear, and neither can you make a good cake from poor materials. For shortening, good butter is most commonly used, but experiment has proved that there are other materials which give equally good results. Beef fat, for instance, is quite as good as butter and very much cheaper. You can buy flank fat for 3c to 5c a pound. A good method of rendering is to soak it in salt water for a short time, cut in small pieces and try out in a double boiler. A mixture of lard and butter is also good, and some butter substitutes, such as oleomargarine, are used with good results.

Fresh eggs, of course, are the best. Packed or cold storage eggs will not beat up well, and may spoil the cake.

Pastry flour is best for cakes, as it contains more starch and less gluten than bread flour, and so does not form such a compact mass. If bread flour is used, take out two tablespoons from each cup of the measure used. Flours differ greatly in thickening properties, and it is often a good plan when trying a new flour to make a small "trial" cake first.

To mix sponge cakes separate yolks from white of eggs. Beat yolks until thick and lemon colored; add sugar gradually and continue heating; then add flavoring. Beat whites until they will stick to the dish turned upside down, and add to the first mixture. Mix and sift flour with salt, and cut and fold in at the last. Do not beat after folding in the flour, so as not to break the air bubbles already formed.

The old-fashioned method for mixing butter cakes consists of creaming the butter very thoroughly in an earthen bowl, using a wooden spoon; add sugar gradually and continue beating. Add yolks of eggs beaten until light, then alternate liquid and flour, add flavoring, and lastly the egg whites beaten until dry. If this method is used remember never to stir the cake after the eggs are added; the last motion must be a beating one. Experiment has proved that a cake of as fine a texture can be made by putting all ingredients together without beating and giving the whole a thorough beating at once. This method may be useful in some cases, but generally it has been found to require more strength and is therefore more difficult to make the beating as thorough as is required for a good mixing of all the ingredients. Butter warmed to room temperature will be found to cream easier, however, do not allow the butter to melt as it then becomes oily rather than creamy. Baking powder should always be sifted with the flour. When fruit is added to cake it should be dredged with some of the flour and added to the batter just before adding the whites of the eggs.

The pans should be greased with melted fat or clarified butter (i. e., butter melted and the salt allowed to settle to the bottom). Dredge slightly with a little extra flour. Sometimes it is advisable to line the pans with greased paper. In filling pans have the mixture come well to the corners and sides of the pans, leaving a slight depression in the center, and when baked the cake will be perfectly flat on top. Cake pans should be filled nearly two-thirds full if cake is expected to rise to top of pan.

Regulation of the oven heat depends on the oven. No rules can absolutely be depended on for testing the heat, as no two ovens bake the same. The following suggestions may help: Arrange your fire so that it will not need replenishing during the cake baking process. A moderate oven will burn a piece of paper brown in five minutes; a hot oven in three minutes. The best way is to test by the hand. Use a moderate oven for sponge cakes and butter cakes baked in loaves.

A cake is done when:

1. It shrinks from the pan.
2. A knitting needle or toothpick comes out clean.
3. It springs back into place when pressed lightly with the finger.

In the baking process divide the time into four parts. The first quarter cake should begin to rise; second quarter it should continue rising and begin to brown; third quarter it should continue browning; fourth quarter it should finish baking and shrink from the sides of pan. Keep moderate temperature through the first three quarters, and reduce it the last quarter.

A cake is tough when it is beaten after the egg whites are added, or when bread flour is used, or when too little shortening is used.

Cake is coarse when it is baked too quickly, or when too much baking powder is used, or when the sugar used is coarse.

A cake falls when it is jarred suddenly during the baking process; when too much shortening is used; when removed too soon from the pan; when the oven is too cold while baking, or when the oven is too hot.

A cake cracks on top when the oven is so hot a crust forms before the cake has a chance to finish rising, or when too much flour has been used.

Now an Odorless Cabbage

A new Chinese odorless cabbage, introduced into this country from the Shantung province of China, has been grown on experimental plots near Washington. The odorless cabbage is rated as a great delicacy by those who have tasted it. It was discovered in China by the plant explorers of the Department of Agriculture. Besides lacking the cabbage smell, it has the additional advantage of being a very rapid grower.

The Chinese cabbage is different in shape from the domestic varieties, being long and narrow. It also requires a different method of cultivation. The seeds of the common cabbage are planted in the early spring in a hot bed or cold frame, and the young plants are set out after the danger of frost is past. The seeds of the new Chinese cabbage, however, are planted during the first week of August in the open ground, and they head up in the early winter.

The vegetable is adaptable to practically all sections of the country where the domestic cabbage will grow, and where the soil is rich enough so that the growth of the plant may be forced. For men who are engaged in intensive farming, this cabbage is likely to become popular. A grower can raise a crop of spinach and possibly a crop of snap beans before he plants the cabbage seeds in August.

California

¶ Is a land of valleys and the advantages it offers to the farmer are dependable.

¶ Water for irrigation comes from mountain streams and a vast underflow.

¶ The climatic conditions insure larger returns per acre than is possible in less favored localities.

¶ There is also the benefit of a great variety of products.

¶ The movement of population into California is rapidly increasing.

Write to any of our agents for Map, Folders and Illustrated Literature.

Southern Pacific

LIVESTOCK

Have You Livestock You Want to Sell?

BREEDERS —AND— OWNERS

Do You Want to Buy Livestock?

ORCHARD AND FARM keeps in close touch with the breeders of pure-bred stock on the Pacific Coast, and it offers you co-operation in your efforts to

Build Up Your Herd

or to dispose of your surplus stock.

Livestock is the life of the farm. Orchard and Farm gives you valuable hints in every issue on its care and management. Our new livestock folder will be sent free on request. It contains something every farmer and breeder should know.

Address Livestock Department

ORCHARD AND FARM

Hearst Building **San Francisco**

Yuba Ball Tread Tractor

Will demonstrate the following at the Sacramento meet, May 7, 8 and 9. : : :

-o-

Plows in any kind or any condition of soil.

-o-

Operates whether the soil is rain-soaked, sun-baked or normal.

-o-

Knows no such thing as failure.

-o-

Proved these things at Fresno where the space alloted to it was more completely plowed than any other—though it rained and rained hard nearly the entire three days.

-o-

The light sandy loam was like mush in every low spot.

Yet the Yuba Ball Tread did its work—and did it well.

Watch the Herculean Dwarf in operation at Sacramento.

Yuba Ball Tread Tractors will plow, harrow, seed, haul, pump—in fact, do any farm work for which there are facilities.

-o-

Write for illustrations and particulars.

YUBA CONSTRUCTION CO.

General Offices
433 California St., San Francisco
Works
Marysville, California

The Use Of Hercules Dynamite On Farm, Orchard and Ranch

THE series of bulletins on dynamite which will appear in this publication are published with one aim in view—to give you intelligent and accurate information with regard to the large place dynamite can be made to fill in your work.

Every statement made with regard to the use of Hercules Dynamite will be absolutely accurate and based on results obtained in actual field work. The various diagrams and plans will show the best methods of using dynamite. The illustrations showing the results obtained from the employment of Hercules Dynamite will be copied from actual photographs.

We are always glad to give any information or assistance to those interested in the use of dynamite. Thousands of men whose interests are the same as yours are saving time, labor, and money by its use. What is equally important, they are getting better results.

We urge that in justice to yourself and your work, you send for a book which we have published, entitled, "Progressive Cultivation." Use the coupon in the corner of this announcement.

HERCULES POWDER CO.
Chronicle Building,
SAN FRANCISCO, CAL.
Please send me a free copy of your book, "Progressive Cultivation." I am interested in Dynamite for

_____

_____

_____

Tree Planting

The two illustrations above show fully the value of using dynamite in planting trees. These drawings are exact copies of photographs of two trees planted at the same time and in the same orchard. The one on the left was planted in a spaded hole, the other in a dynamited hole. The growth and development of the latter is almost twice that of the former. This difference always shows when Hercules Dynamite is used.

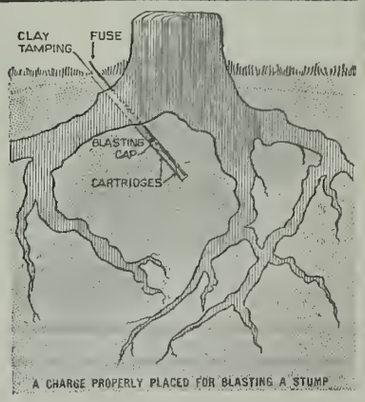
The ground is thoroughly broken up. The roots have a chance to spread in a natural manner. Also the work of planting is done more quickly and at less expense. In "Progressive Cultivation" are given interesting details with regard to the use of Hercules Dynamite for tree planting. Are you familiar with the method and its results?

Stump Blasting

Every man who has had experience in pulling stumps *without* the aid of dynamite knows only too well the amount of labor and time involved.

When you have land to clear, use Hercules Dynamite. You not only save labor and time—and, as a result, money—but you also thoroughly break up the subsoil and very effectively prepare the land for cultivation.

The diagram given shows the best way of removing one kind of stump, that with matted, spreading roots. When dynamiting a stump with a tap root the charge should be placed differently to get the best results. "Progressive Cultivation" tells just how stumps of various kinds can be most readily removed.



A CHARGE PROPERLY PLACED FOR BLASTING A STUMP

Drainage Work

The draining of swamps and ponds can be done better with Hercules Dynamite than by any other means. There are several ways in which dynamite may be used. We have room to illustrate only one of them—the crater method. By this method the hard soil forming the bed of the swamp is broken up and the water drains off through the loose stratum below.

In "Progressive Cultivation" full details with regard to drainage work with dynamite are given.

BLASTED CRATER FOR DRAINING SWAMPS AND PONDS

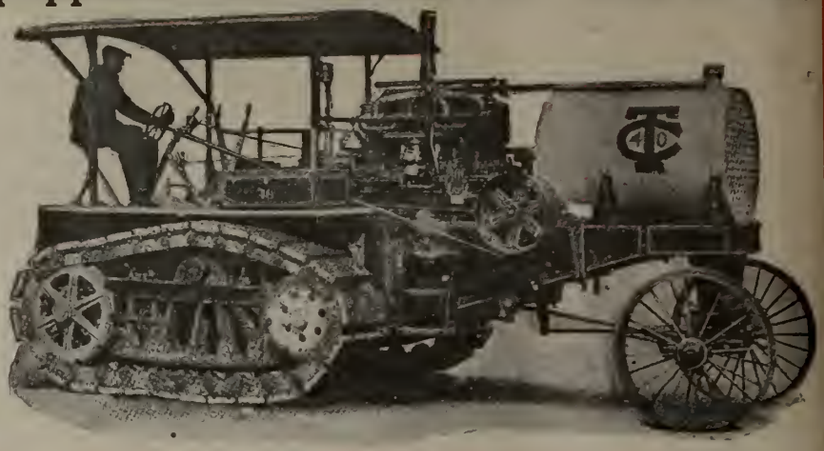
What Is Said About Traction Engines

on Pages 6 and 7, in this issue of Orchard and Farm, should interest every progressive farmer in California. The demonstration of tractors at West Sacramento, May 7, 8 and 9, will show all types of machines.

Twin City "40" Oil Tractor Equipped With Flat Wheel Attachment

Fits the same axle and is interchangeable with regular round wheel.

MAKES TWO TRACTORS IN ONE



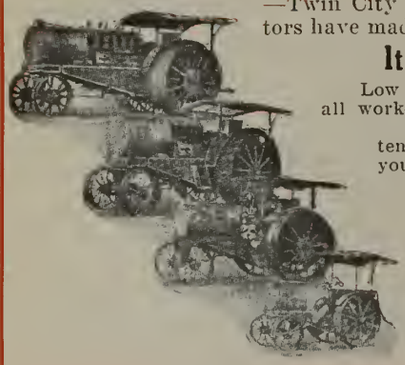
The Twin City Flat Wheel Attachment is a radical improvement and the principle upon which it operates differs greatly from any other of its type.

Essentially this flat wheel consists of a steel framework with a manganese steel shoe over 6½ feet long reinforcing its lower side. This frame resembles a sled runner in its construction and method of mounting upon the rear axle of the Tractor, and travels upon a series of steel rollers whose bearings are fastened to the backs of the wheel treads. These treads are fastened to the links of a pair of endless chains carried by large sprockets. Their sole purpose is to furnish in every kind of soft ground a foundation for the series of rollers upon which the Tractor travels.

This attachment has been tested with the success that has marked the development of the entire line of

TWIN CITY TRACTORS

Twin City Oil Tractors are built in four sizes—a size for every kind of work. Twin City "15"—Twin City "25"—Twin City "40"—Twin City "60." All sizes are equipped to use gasoline, kerosene or distillate. Twin City Tractors have made a great record of successful operation in all parts of the world.



It Is the One Tractor That Stands on a Far With the Highest Grade Automobile

Low cost of upkeep—low repair bills—durability—economy of operation—ease of access to every part—adaptability for all work—surplus power—are features that mean most to you in a tractor investment.

Examine the Twin City steel plate frame—that superb heavy duty four-cylinder motor—that force feed oiling system—that compact inclosed cooling system—that automobile type of axle which makes for easy steering. It won't take you long to find the reason for superiority.

The Twin City Is the Greatest Tractor Value on the Market To-Day

Write for information about these Tractors and the Twin City "40" Flat wheel attachment.

MANUFACTURED BY

Minneapolis Steel & Machinery Co.

MINNEAPOLIS, MINN.

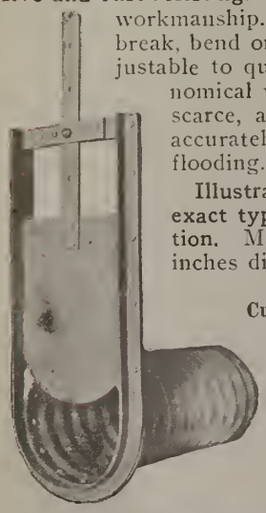
A. L. Law, Western Representative **1405 K Street, Sacramento**

STANDARD IRRIGATION GATES

STANDARD DROP GATE

Made also of Genuine Open Hearth Iron that is non-corrosive and rust-resisting. A gate that is perfect in its design and workmanship. After or before installation will not break, bend or jam out of shape. Size of opening adjustable to quarter of an inch, making this very economical where water is scarce, and can be set accurately to prevent flooding.

Illustrations show exact type of construction. Made in 8 to 24 inches diameter.



Cut on left shows gate open.

Cut on right shows gate closed.

Standard Automatic Flood Gate

Illustrations Show Construction

Cut on left shows gate open.

Cut on right shows gate closed.

This Standard Gate is built entirely of Genuine Open Hearth Iron—no wood in it. It operates automatically by having its valve set to swing according to pressure of water in front or behind it. Valve can be weighted to operate stiffly as desired. Designed for use with Standard Corrugated Pipe for letting in or taking out water—a gate that will last a lifetime. Made of Non-Corrosive, Rust-Resisting Iron, in sizes 8 to 24 inches.

For full information regarding sizes, prices, and to insure quick delivery before the rush season, write to

Standard Corrugated Pipe Co.

516 Rialto Bldg.
San Francisco

737 Laurence St.
Los Angeles

See This Space Next Issue for Advertisement of Small Orchard Flume

ORCHARD and FARM

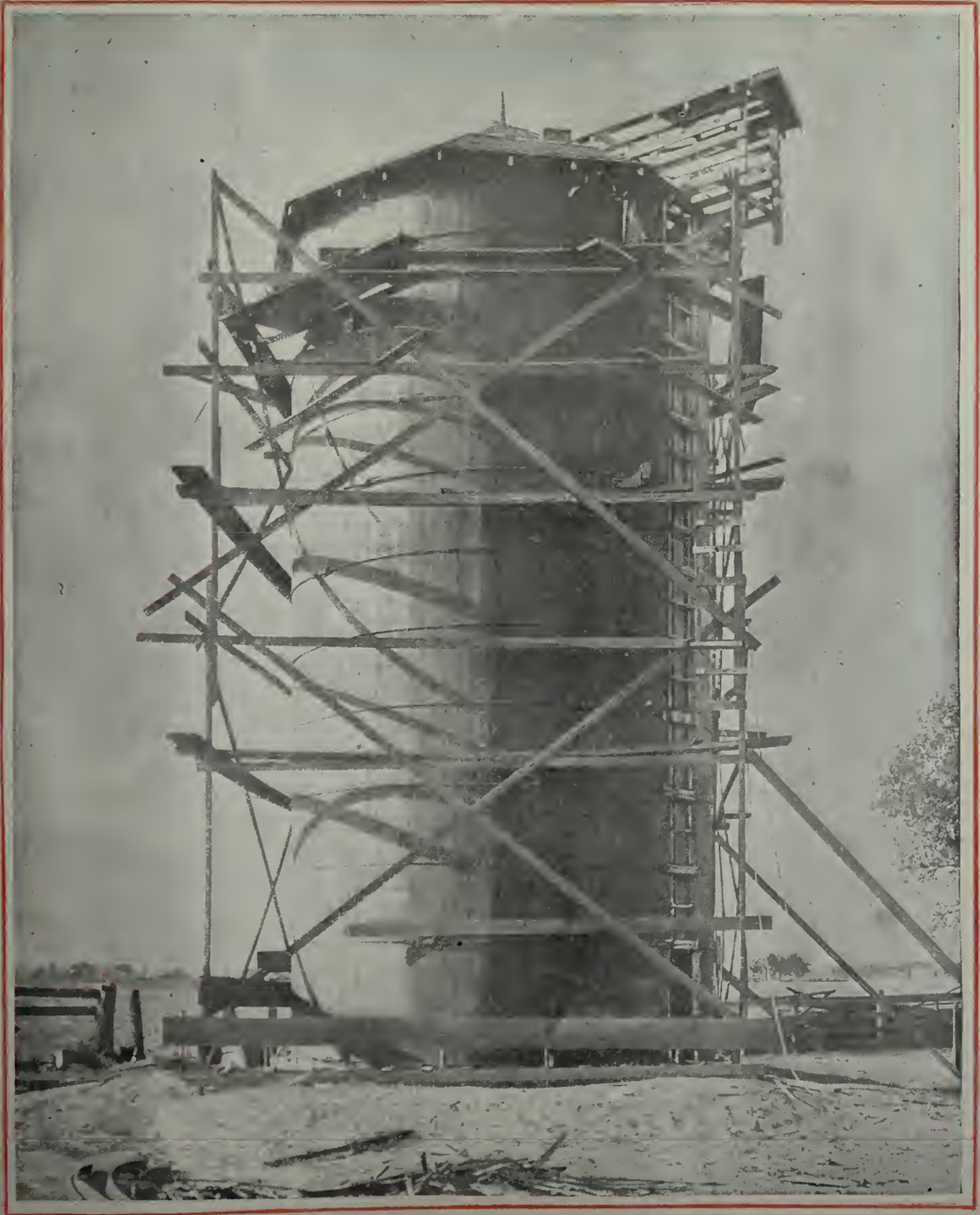
HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888

IRRIGATION

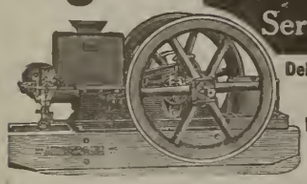
STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 5 Published by Country Life Publishing Co. May, 1914 Hearst Building, San Francisco, Cal. $1.00 a Year



A Silo to Promote the Prosperity of a San Joaquin Dairy.

Armstrong
1½ to 20 H. P.
Engines
An Engine Built for Hard Service



Delivers 100 Cents in SERVICE For Every Dollar Invested

IF you want an engine that is built for exacting, dependable service—that is economical in first cost and cost of running—one that runs so *true* and *smooth* and *steady* and QUIET that you can just *forget* her—HERE'S YOUR ENGINE.

Built For Old Customers First

Armstrong Gas Engines right up from the raw material are built complete in our own factory. They are shipped all over the world to our regular customers—to men needing a dependable trouble-proof engine to operate Armstrong **Well-Drilling Machinery.** Naturally these men get absolutely the best that lies in our power to devise. And we've been in the business for over 45 years. Today men say no engines excel the Armstrong in durability and simplicity of construction.

Magneto Free

We don't tell you ours is the only good gas engine. But with its wonderful built-in gear driven magneto—furnished with all engines over 1½ H. P.—with other striking advantages—with the same standards of quality adhered to that have put the name Armstrong to the very front—we DO claim that it is close to perfection. After comparative tests side by side with other engines, they have seemed to put the Armstrong Engine IN A CLASS BY ITSELF.

Let Us Send You Full Facts—Owners of Armstrong Engines get real protection. The written guarantee going with each engine is the strongest indication of unequalled quality ever submitted by a manufacturer.

If you need an engine, you should at once write us. Just say "Send Armstrong Facts." Do it today.

1 1-2 to 20 Horsepower — Stationary and Portable

Armstrong Manufacturing Co.
403 San Pedro St. Los Angeles, Cal.
Home Office & Factory, Waterloo, Iowa; Estab. 1867
Norman B. Miller, Distributor
503 Market Street San Francisco, Cal.

Use the Cheapest Pumping Power

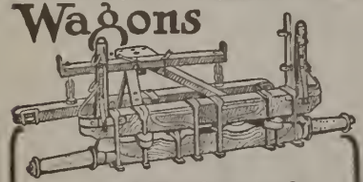
Let the free wind pump your water. Don't use expensive gasoline or wear your life out on a pump. Get a

STAR WINDMILL

that will save hours of drudgery and hundreds of dollars in fuel bills. It lasts longer than any other pumping power, often giving 25 to 40 years service. SEND FOR FREE BOOK about the STAR.

Pacific Hardware & Steel Co.
Pacific Coast Distributers,
704 7th St., S. F.
Los Angeles.

Rushford California Wagons



Good Timber and "Bone Dry"

The Rushford is the strongest and lightest running wagon in the world—it is the most satisfactory to the user—will stand the roughest usage. Note the position of the "outer bearing" block on both front and rear axles. "Outer bearing" axles increase the carrying capacity not less than 25%. It is absolutely impossible to break an axle with this outer bearing, nor is there any danger of the axles being sprung.

Send for Literature

The H. C. Shaw Company
Wholesale Distributers
52 N. California St., Stockton, Cal.

CONTENTS FOR MAY, 1914

Page

THE SILO A LIVESTOCK FUNDAMENTAL 1
Both general facts and details of great value on this important but little understood aid to dairying and stock production.

RIGHT PRUNING AND NAVEL QUALITY 2
Advanced theories on influence of sucker wood on navel quality.

SMYRNA FIG THRIFT IN CALIFORNIA 2
Illustrated account of growing of the greatest fig tree of this variety in California.

THE COMING TRACTOR DEMONSTRATION 3
Outline of Tractor Demonstration to be held by "Orchard and Farm" at Sacramento May 7, 8 and 9.

COMMERCIAL ASPECTS OF THE APRICOT 4
An unusual handling of the subject that suggests important opportunities in apricot growing and production.

WORKING METHODS OF CITRUS CO-OPERATION 5
This shows the part of the individual grower in the great co-operative organization of the California Fruit Growers' Exchange.

TIMELY HINTS FOR THE FRUIT MEN 6
Valuable pointers applicable this month on fruit thinning and suckering.

A GREAT FRUIT GROWERS' CONVENTION 7
Announcement of coming Fruit Growers' Convention at State University Farm—a new kind of a convention and of great importance.

EFFECTIVE WALNUT HULLER 8
Illustrated description of very effective walnut huller that can be made at home.

PLANNING A PUMPING PLANT 9
Facts taken from new University Bulletin that will show how to decide on right pumping plant for any conditions.

PROBLEMS OF THE FARMER 12
Answers by members of the staff and others to agricultural questions sent in by readers.

CALIFORNIA CROP CONDITIONS 14
Reports from County Horticultural Commissioners all over California forecasting crop yields and describing conditions in their counties.

VALUE OF THE GRAIN SORGHUMS 17
Some features of the grain sorghums commonly overlooked, but which promise to make them of extreme importance in California.

INTENSIFIED SHEEP FARMING FOR CALIFORNIA 18
One of a great series of articles on "Intensive Livestock Production" by W. M. Carruthers.

THE CHESTER WHITE, OR O. I. C. HOG 19
One of another great series of articles by Mr. Carruthers on "California Aspects of the Breeds." These two series will make California livestock history.

CALIFORNIA STOCK NOT REPRESENTED 20
In this I. D. Graham, Assistant Chief of the Department of Livestock, P. P. I. E., shows the value to California of the livestock show at the Exhibition.

LIVESTOCK PROGRESS AT THE EXPOSITION 22
Some plans for the livestock display in which all stockmen will be interested.

CAN SEX IN CATTLE BE CONTROLLED? 23
L. H. Sullivan of Shasta county states a new theory by the application of which the sex of offspring in cattle can be regulated.

IRRIGATION AND POULTRY SUCCESS 28
Charles Weeks of Palo Alto, our new poultry writer, explains the great advantages of irrigation in poultry production and the methods he uses for same.

POULTRY IN THE IMPERIAL VALLEY 29
Some unique and interesting features of poultry production in this great section.

SEARCH FOR THE BIGGEST EGGS 30
"Orchard and Farm" is endeavoring to find what egg was the largest laid by a hen on the Pacific Coast.

PROGRAMME FOR FARM IMPROVEMENT 31
A plan for the systematic development of the farm interests of Arizona.

HOUSEHOLD DEPARTMENT

USEFUL AND UP-TO-DATE PATTERNS 32
The latest things to wear.

THE HOUSEHOLD EXCHANGE 33
Contributions from housewives, for the May issue, on valuable laundry methods. Prizes given for best suggestions.

READERS' EXPERIENCE WITH SILK WORMS 36
Several readers, following last month's story of silk worm culture, relate their experiences.

BIG MONEY in the OFF SEASON

One Man can run it.

Earn $2000.00 a year extra money, besides your regular farm work, with the

Improved Powers Boring and Drilling Machine. Bores a well 100 ft. deep in 10 hours. One man can run it; a team operates it and easily moves over any road. Bores everything except hard rock, and it drills that. No tower or staking, rotates its own drill. Easy terms; write for catalog.

Lisle Mfg. Co.
Dept. 1, 625 Third St.,
San Francisco

SHAW STOCKTON HEADER GEARS

Built of best materials, well proportioned. Strongly clipped, braced and ironed throughout. Years of successful service have demonstrated its fitness to withstand the trying climatic conditions of the Western States. Built in sizes and weights to suit all demands. Fully guaranteed.

Full Descriptions Upon Request

THE H. C. SHAW COMPANY
Wholesale Distributers
52 N. CALIFORNIA ST.
Stockton, California

Use a MOTOR-DRIVEN PUMP

Electricity is clean, quick and reliable. There's no trouble or worry connected with it and it is always ready when you want it. The

American Centrifugal Pumps With Motor Base

are specially built for high speed work. They are all equipped with patent ball bearings.

A modern up-to-date pump using modern up-to-date power.

OUR ADVISORY SERVICE BUREAU
Free to You

will give you advice as to the best pumping outfit for you.

What is your Irrigation Problem?

Write for Interesting Catalogue

The California Hydraulic Engineering & Supply Co.
72 Fremont Street,
San Francisco

ORCHARD AND FARM
IRRIGATION

Vol. XXVI MAY, 1914 No. 5

The Silo a Livestock Fundamental

THE silo is going to be a fundamental factor on the new and improved dairy ranch in California and on the stock ranch of almost every kind. Alfalfa is forever to be the basis for livestock feeding, corn is to be a very important supplement, and the silo a means of combining the two to best advantage and aiding feeding methods in various other ways. It is time now to put out some silage crops, and to give most attention to the subject.

A year or so ago the silo was considered a freak in California, a hobby of a lot of impractical theorists or of dairymen with a fancy trade and lots of money to spend. The idea was partly justified by the fact that a good proportion of the silos first erected were more or less of a fizzle, mostly owing to poor workmanship or management. At the present time silos can be found in all parts of California and are considered a highly desirable feature with all kinds of stock. Except for the few who have erred in design or workmanship, practically every dairyman owning a silo is enthusiastic over its success. Except where an expensive kind was built nearly every dairyman who has managed well has found that the cost of the structure has been less than he first figured.

What Is a Silo?

A silo resembles an overgrown barrel or hot water boiler, averaging about 30 feet in height and 15 or 18 feet in diameter, open on top, or with a roof, but tight everywhere else, except where facilities for opening to take out the silage are left along the side. It is used to store green food rather than hay, the green material fermenting to make kind of a saurkraut, only it is derived from corn, alfalfa, or some such crop rather than cabbage. The material is chopped fine when put in storage and packs down so tightly that an immense tonnage can be kept in comparatively small space.

Silos can be made of concrete, concrete blocks, staves or of studding lined with resaw and building paper. The concrete silos are expensive and durable, being erected mainly by those who are willing to spend money to have a fine, permanent structure.. Stave silos with a poor type of stave have given the stave silo a bad name in California, but stave silos of the right kind for California give excellent service, are inexpensive, easy to erect and care for, and can be taken down and erected elsewhere, a point for the tenant dairyman to consider.

Then there is the common, home made silo, with frame of 2x3 or 2x4 studding lined with a layer of half inch lumber, a layer of good building or roofing paper, and a second layer of resaw.

Method of Construction.

If a person erects a stave silo or a concrete block silo, he can get instructions along with it, but for the ordinary resaw silo that is built entirely on the ranch with lumber bought from the lumber yard, the following few suggestions on construction may be of value. The silo can be built from ground level, but had better be sunk in the ground four or five feet for stability, for greater convenience in filling, and as making the bottom tighter. A concrete foundation is highly desirable, but not essential.

The studding are set a foot apart, center measurement, or a little more and one left out for the doors used for removing silage. This leaves space for the doors about two feet wide.

As Silage Corn Is Often Worth Its Weight in Alfalfa Hay.

The frame of the silo is braced and lining nailed on as far up as a man can work. As a usual thing the silo is erected about the time that the material is ready to put into it and as a result the carpenters can stand on the silage as they work and thus all trouble in erecting scaffolding is saved.

Redwood or Oregon pine resaw six or eight inches wide is nailed on as neatly as possible to prevent leakage. To bar out the air as securely as possible building paper is put on under this and the universal opinion is coming to be that the extra price spent for good paper is well spent. In fact good roofing paper is highly advised. Air will leak through the resaw and spoil ordinary building paper in time, but good roofing paper will hold it out. Then there is another layer of resaw. Needless to say, it is highly necessary to have the resaw cover the cracks in the first layer or only the paper will be be left to protect the silage. For strength it is necessary to break joints in nailing the resaw on. When, after some seasons the resaw splits a bit and cracks form, a second lining of building paper can be put on and a third lining of resaw to tighten the silo up again.

One effective method of putting on resaw is to start it at a slight angle at the bottom like a screw so that when the circuit is completed the second width of resaw will fit over the upper edge of the first one. In this way the carpenters just keep nailing it on without having to fit joints every course.

Doors are left about every five or six feet and are about two feet square. The edges are beveled to fit into the frame and the pressure of the silage from the inside keeps them tight. A 2x6 can replace the 2x3 or 2x4 at each side of the row of doors. To prevent leakage some good tough paper is put over the cracks when the silo is filled. There generally is some leakage and some silage spoiled. Stave and other manufactured silos, however, have very tight doors and there is less injury in this way.

It generally is unnecessary in interior California to have a roof, though the more rain the more need of covering. A roof is always good though, and as a protection to the resaw it is a benefit to have an outside lining, which is more often omitted than used.

Silo and Silage Costs.

It is generally stated that a silo of the common sort can be erected at a cost of about a dollar a ton. Really the cost will average quite a bit more, labor considered, though the larger the silo, the less cost per ton. Mr. Reitt of Tulare at the State Dairy convention, stated that he built, for some neighbors, a 225 ton silo, measuring 20 by 32 feet and the bill for the entire work for building the silo, the lumber, and putting in the 225 tons of silage was $185.

C. G. McFarland of Tulare informs us that the material for a 73 ton silo 14 by 28 feet, cost $72, and labor of building about $18. A. A. Jenkins of Tulare states that a 108 ton silo, 14 by 32 feet, redwood studding and resaw and concrete foundation, cost $128 for material. J. C. Stall of Tulare used 2x4 Oregon pine for studding and Oregon pine resaw and a 200 ton silo, measuring 20 feet in diameter by 32 feet in height, cost him $250. All these figures as to capacity were given by the owners and evidently there is some difference in method of calculating same. A rough estimate of the cost of erecting a resaw silo would be $1.25 per ton, labor and material. It is stated that material can be raised and put into the silo for $2.00 per ton. It may be so, according to method of figuring, but no one would care to sell silage at that figure. Even so, when silage often is worth as much as alfalfa hay, weight for weight, it can be seen that it is a cheap proposition. A special cutter and filler is needed to fill the silo, but this can be run by any good engine or electric motor and used on many silos.

Some Silo Advantages.

The fundamental reason for a silo is probably that it provides green food for the stock. Although silage is not fresh food, it is juicy like green food and the cattle are often as fond of it as they are of the green material itself. It has every good effect that there is to green food, which is saying a whole lot. Cows give so much more milk when fed green stuff and are in such better trim that it makes a great difference in dollars and cents.

It thus saves pasturing and so gives a much higher production per acre and removes danger and trouble from bloat, both of which are immense value to the dairyman. It lets all the alfalfa be fed as hay, which is a big saving in labor over cutting and feeding green alfalfa.

It enables a better combination of feeds to be given than on the ordin-

(Continued on Page Thirty-Six).

Right Pruning and Navel Quality

IN the summary of factors affecting the quality of oranges in the April issue of Orchard and Farm pruning was merely one point mentioned, but it is important, and what is more, the majority of orange growers either disagree with or ignore many of the main points spoken of here.

The kind of pruning discussed right here in its effect on quality does not relate particularly to the shaping of the tree, the height the branches are kept off the ground, the amount of daylight that is let into the center, or anything like that; it relates especially and particularly to the removal of sucker wood on the ground that it produces an inferior quality of fruit in less than normal quantity and causes deterioration in the whole tree.

This is not standard doctrine in orange districts. It was first set forth by Charles A. Dewey of Upland several years ago and has met vigorous opposition from the majority ever since, and vigorous support from a minority that continues to increase and to feel more sure of their ground.

The idea applies particularly to the navel orange, which is a highly refined and delicate fruit, the normal wood of which is more likely to be different from vigorous sucker wood than the wood of the more vigorous growing Valencia, lemon or pomelo.

Theory in Brief.

The theory in brief as it relates to the Washington navel and perhaps in much less degree to other citrus fruits, is that there are two distinct kinds of wood sent forth from navel orange trees; the normal, true to type fruit wood, and the sucker wood which occasionally develops when the light strikes the bark, or at some other time. The fact is too apparent for remark that suckers or water sprouts do come forth frequently and that they are of different type from the regular young growth coming out on the twigs. Most people ignore the difference in large part, never thinking but what these suckers after they harden up are exactly the same in quality as the regular normal growth. The Dewey theory is that they are of different nature from time of origin onward as long as the tree endures and that being of different quality, they bear in different amount and the fruit is actually of different quality also. The good wood, being of normal origin and nature, is a better producer and the quality of fruit better; the sucker wood, being of more vigorous nature and rather a reversion to wild type, departs more from normal in productivity and quality, being inferior in both points.

The good wood is different from sucker wood in following the navel type in growth. It comes from a bud selected from a good navel tree and from a part of the tree normal in every respect. The growth is of the true navel character in growing crossways and downwards.

Sucker wood is more of an upstanding, vigorous type, growing upwards and outwards, the stems are straighter, the grain straighter and more open. It makes a greater growth than normal navel growth, and probably is somewhat more thorny.

A fact clearly to be borne in mind is that if this theory of sucker wood being inferior is true, trees propagated from buds taken from sucker wood will be inferior in productivity and quality of fruit. Although there may not be a real sucker in the tree, it yet will be in a way sucker wood on account of its origin and a person should be as careful of the source of his trees as of the pruning after the trees are there.

Admitting, then, that there are two types of wood which may appear in a navel tree, true fruit wood and the sucker wood, the final point remains, Does the fruit follow the wood? In other words, Is the fruit produced on sucker wood inferior to that borne on normal wood? The majority has either never thought of it or says that there is no difference. The minority says that inferior fruit is produced on inferior wood. The theory of the case makes the view of the minority pretty strong. The observations of the minority are that for the first year or so after the suckers have hardened up and begun to bear, their extra vitality, for suckers are strong growers, enables them to produce very well, about up to the standard of normal, healthy growth, but after a couple of years of bearing has taken off their extra sucker vitality, their real quality is shown by the fact that they do not produce anywhere near normal amount and the quality of the fruit is poorer, as is natural with half wild wood. Thus, if you see a branch made of a sucker standing out from the natural surface of the tree bearing a good crop of oranges, don't decide that suckers make as good crops as other wood, but examine other sucker branches also.

Furthermore, notice how frequently, although the sucker will have a fair crop, fruit will be scarce on the rest of the tree. In other words, since suckers draw the sap to themselves, a sucker will rob the rest of the tree and make it unfit to produce properly and thus demoralize the whole tree. The observations of the minority are that when a sucker gets a good start it will dominate the tree and not only be a poor stick itself, but make the rest of the tree poor.

Mr. Dewey claims that next July if one looks at a tree where a sucker has started to rule he will see a regular line along the upper third of the tree where there is a difference in color between sucker part and normal growth and leaves; that the following year the line will drop to make only a third of the tree good and two-thirds reverted; and the third year the sucker will dominate everything. Owing to the frost of January a year ago and the weakening of the trees, these indications may seldom show up this summer, but will do so next.

Mr. Dewey came to these opinions from observations on trees from buds selected from the two original Washington navels at Riverside, deciding that trees growing from buds selected from sucker wood were inferior, also that trees which sent out sucker growth became inferior. Years ago he cut off the sucker wood from two trees in an orchard which in spite of fine care was not producing well. The following year the trees produced four and a half and four boxes of fruit against a box and a half for previous years, and increased in productivity up to 10 and 11 boxes a year. Observations from that time to this convince him that the only thing to do is to cut out the suckers.

Sucker Nests.

When a sucker is to be cut out, it has to go out clean to the trunk of parent stalk. Recently we examined a fine selection of "sucker nests" sent to the University of California by A. A. Jenkins of Porterville. The pruners knew that something ought to be done with vigorous sucker growth and trimmed it off evenly with surface of tree. Cutting back makes vigorous growth and the suckers were pretty vigorous at first, so close to point of cutting they each sent out a big bunch of second generation suckers, which was worse and more of it and made an awful looking mess. Suckers have to be cut off clean and new ones rubbed off before they have hardened up. A sucker is a bad thing and letting it age up a bit, harden and branch out don't improve it a particle

A tree commonly seen with sucker growth foremost will have one strong branch sticking out near the top past the smooth, uniform leaf surface that characterizes a navel tree true to type. The projecting branch may look a little denser than the rest of the tree and it can be seen from a distance. Going to the tree and looking inside, this branch will be seen to start usually from the trunk and go straight up for five feet or more without branching, being clearly of different type from true navel wood. Other smaller suckers may start from the branches themselves and be smaller, but all show their true quality, even to the unskilled in citrus habits. One thing to help identify them is that suckers usually start from hard bark and good wood from the twigs, but this does not always hold true. However it comes and however old it is, a sucker is a sucker, and one lot of citrus growers claims that sucker wood is not the kind of wood to produce either the amount of fruit that is wanted or the quality of fruit that can be held up as a standard of orange excellence.

Smyrna Fig Thrift in California

IT is only a very few years since it was found that Smyrna figs could be profitably grown in California. How successful they can be is shown from the accompanying photograph of a twenty-nine-year-old Smyrna fig tree at the home of I. M. Parlier, at Parlier, Fresno county. In view of the frequent doubts regarding the advisability of planting Smyrna figs, or some other variety, the performance of this tree is of considerable value.

"Under the Spreading Fig Tree" in Yard of I. M. Parlier.

As can be seen from the illustration, the tree is immense. Although less than thirty years from the cutting, it has a spread of 71 feet, being practically round. It is approximately 25 feet high. A notable fact is that it is growing faster now than it ever did before, and is in perfect vigor all the way through. Mr. Parlier, who is seen with wife and grandson in the illustration, cut off a corner of his house to give it room to grow, and expects to move the house in a couple of years to give it still more room. He removed a tank house to give it room several years ago. Its spread is increasing about three feet every year.

There is no reason, aside from natural soil wealth, for this wonderful growth. There is no cultivation and no irrigation, though an irrigation ditch a short distance off provides it with water seepage. The tree is simply given the ground to itself, other trees being removed as this expands, and the branches are propped to keep them off the ground.

The soil is the so-called white ash of Fresno county that suits the raisin grape so well. On 80 acres nearby Mr. Parlier has gotten two and one-half tons of raisins per year. He received $52,000 rent for this vineyard in ten consecutive years.

On November 15, 1913, Mr. and Mrs. Parlier celebrated their golden wedding anniversary and entertained 300 guests, all of whom ate the wedding dinner under the shade of the tree and had room to spare.

The photograph was taken in April of this year, when the tree was partly leafed out. When fully leafed out it is almost too dense to make a good photograph, and in winter it does not make as good a photograph.

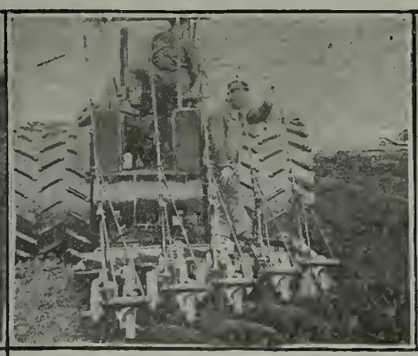
Mr. Parlier thins out the tree to prevent it from becoming too dense, which is probably one reason for its thrift, and has removed a good wagon load of brush at one time. Suckers also come out very strongly along the main branches, and these are pulled off before they reach any size, or they would make the tree a jungle in the center for one thing and rob the outer growth for another

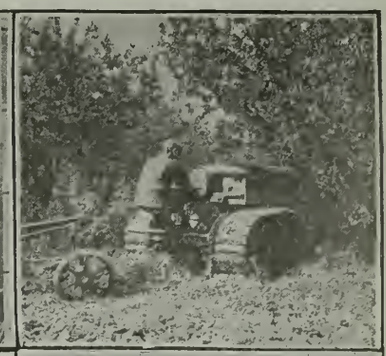
The tree is a heavy producer and bears from the time the main crop ripens, usually late in June, until the frosts come in the fall. Owing to the depredations of the birds no good estimate can be made as to yield, but it can be seen that with this long season it must be enormous, and Mr Parlier states that it is much greater than would be secured from white Adriatic or Black Mission. This is a point prospective planters should consider. In order to get this long cropping season it is necessary to have Capri figs available for a long season, so that the fig wasps may pollenize the Smyrna figs. If fig wasps could be secured early in the spring with pollen, figs would be ripe very much earlier. The figs are borne all over the tree, in center as well as near the ends of the branches.

It can be seen that the Smyrna fig, which is yet rather new for California, is thus a fine producer as it grows older, and that older trees do even better than young orchards lead their owner to expect From the way this is growing there is no telling what it will be like when it gets to be a hundred, for figs are remarkably long lived.

Tractors to Demonstrate at West Sacramento

May 7, 8 and 9





THE date of this issue of Orchard and Farm is just seven days ahead of the opening day of the tractor demonstration organized and promoted by Orchard and Farm to take place at West Sacramento on Thursday, Friday and Saturday, May 7, 8 and 9. Mention of this most important agricultural meeting is made in announcements on several other pages of this issue, so that the dates will be well remembered. The purposes, scope and importance of this gathering have already been freely and thoroughly discussed to such an extent that what might again be here said in that connection would be only repetition. The whole sum and substance of the matter is this—the meeting is going to be big—its bigness will make it successful—and being successful is only another way of saying that it will be helpful and valuable to those who attend.

Just as this issue goes to press we are able to announce the general outlines of the three-day programme to be carried out at West Sacramento. The same general conditions as published to govern the Fresno meeting last February will control at this one. There will be no contests or awards —no premiums or prizes. The splendid array of machines and implements will be there simply to show their worth under true average working conditions. The elimination of the old much abused prize award system promises to make this meeting noteworthy on the Pacific Coast. Such a course leaves decision entirely up to the individual spectator, which is right where it belongs.

As previously announced, this meeting has the co-operation of the State College of Agriculture in the person of Professor F. L. Peterson, who will be actively in charge of field operations. Also, as previously mentioned, special railroad rates will be in effect on all steam and electric lines running into Sacramento. These rates will be one fare and a third for round trip. The portion of the West Sacramento Company's holdings upon which the demonstration will be held is only about a quarter mile from the main line of the Oakland, Antioch and Eastern Electric line and forty-five-minute passenger service from Sacramento will be maintained all of the three days. No admittance charges will be made. The whole meeting is open and voluntary. Lunches and rest places will be available right on the grounds and in every respect it seems that arrangements are as complete as they can be made. It now remains simply for the great machines to be shipped and assembled. Truly on the morning of May 7 a most imposing fleet of iron and steel farm battleships will be ready to get under headway according to the schedule outlined on this page.

It may be well to state that Orchard and Farm will have headquarters in the Sacramento Hotel, which has also been named as headquarters by the machinery men. For any needed information while in Sacramento inquiry should be made at this hotel. Subscribers are urged to attend this meeting for the entire three days if possible—if not then come for two days or for one at least. The enjoyment and information you will get will repay you many times over.

Tractor Demonstration Programme

THE general programme of the tractor demonstration, organized by Orchard and Farm, to be held at West Sacramento May 7, 8 and 9, has been arranged as follows:

THURSDAY, MAY 7.

On the Main Field All Day.

Forenoon—Assembly demonstrations of the large and heavy tractors.
Assembly demonstrations of the orchard and vineyard tractors.
Afternoon—Private demonstrations of all classes of tractors.

FRIDAY, MAY 8.

Forenoon—Demonstrations of large tractors on the main field.
Afternoon—Demonstration of orchard and vineyard tractors in actual work in vineyards and orchards.

SATURDAY, MAY 9.

Forenoon—Private demonstrations of all classes of tractors.
Afternoon—Final assembly demonstration of all classes on the main field.
All Day Celebration—Moving pictures to be taken. Closing of the meeting.

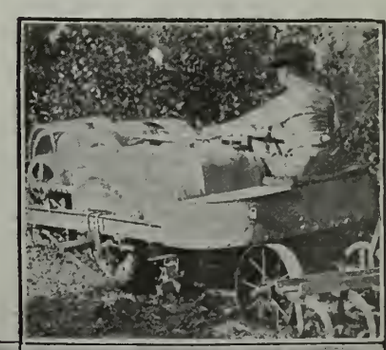
The demonstrations will all be under actual working conditions and will be under the personal direction of Prof. F. L. Peterson, head of the division of Farm Mechanics of the Agricultural College of the University of California, assisted by representatives of Orchard and Farm.

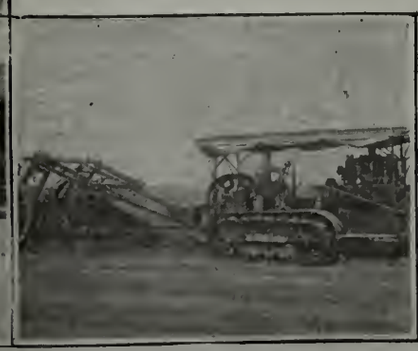
The hour of beginning will be 9:30 a. m. each day. The forenoon period to close at 12 noon.

An hour and a half will be allowed for lunch.

The afternoon periods will begin at 1:30 p. m. and extend to 4 o'clock.

Headquarters of machinery, men and Orchard and Farm will be Hotel Sacramento.





A Collection of Characteristic Scenes Showing the Different Makes and Designs of Tractors Doing Many Kinds of Farm Work Similar to What Will Be Done at the West Sacramento Demonstration. All of the Machines Here Shown Will Be In Operation at the West Sacramento Meeting.

Commercial Aspects of the Apricot

THE following is not meant as a generalized account of apricot growing in California, but rather an outline of the features that govern the growth and profits of the industry. A query in our questions and answers department suggests a reason for it.

For the first thing, apricot growing is on about as favorable a basis in California, considering its horticultural habits, as could reasonably be expected. The tree is apparently more at home in growth and fruiting in California than in any other part of the world that has any influence in the markets. In addition to this, there is practically no other part of the country where the apricot is likely to be of special importance, and this is about the only fruit, with the possible exception of the almond, of which this holds true. The fruit can be sold fresh, canned or dried. It has such a high flavor and attractive color either canned or dried and is so well known over both Europe and America that the utmost increase of acreage could be accomplished without flooding the market, provided the market were properly handled.

Where the rub comes as far as the individual is concerned is in finding the right situation for the apricot, for though prospects may be excellent, labor problems and irregular bearing in most places may more than make up for the main advantages of the fruit.

Leading Apricot Sections.

The facts about apricot distribution in California to-day will show some very peculiar things. It is only in a few districts that apricots are a leading and profitable fruit, yet those districts include practically all sorts of California horticultural climates. This being the fact it is reasonable to expect that the fruit could be profitably grown nearly all over California if well handled.

The leading apricot section is near to and south of San Francisco bay, where it is second only to prunes, Santa Clara having 550,000 and Alameda county 296,000 bearing trees. This section, including Contra Costa, San Benito and Santa Cruz counties, has 1,276,000 trees.

From there one jumps to Ventura, Los Angeles and Orange counties, where apricots overwhelm every other deciduous fruit (if we do not include walnuts) with 487,000 bearing trees and new acreage on almost every available spot.

Again apricots have a big lead over all rivals in the Winters district at the southeast corner of the Sacramento valley, in a hot, dry atmosphere, in fact, in just the kind of a location chosen for northern orange planting, though apricots, strange to say, are seldom found in northern citrus districts.

We find apricots sharing the deciduous acreage of interior Southern California, San Bernardino and Riverside counties, which have 270,000 bearing trees. Again on the floor of the great interior valley in Kings county, which has no special freedom from frosts, are found 300,000 trees. To finish up the report, Imperial valley, with another kind of climate altogether, almost promises to be the greatest apricot producer of all.

In few other counties are many apricots found, and if found, they are in a small minority as compared with other fruits, and consequently not as profitable on an average as those other fruits. With the variation in climates named above, why should apricots not be a success all over California?

A description of the nature of the apricot will explain in part this distribution and possibly give a little light on ways of succeeding with the fruit. The tree is an extremely vigorous grower (and producer) when everything suits it, but it is quite hard to suit. That is why it is difficult to say just where production can extend, or where it will stop. When we find out just how to suit it, its vigor and productivity and high quality make it very profitable. Here are some suggestions:

Apricot Success at Linden, San Joaquin County.

In the first place, the apricot is very susceptible to frost, being only exceeded of our common fruits in this respect by the almond, which holds all honors for uneven bearing. Success comes in getting locations where it can dodge frosts, and the selection of districts given above was made by the apricot largely on a temperature basis. The bay and southern coast counties are apricot districts because the ocean tempers the climate and holds off too low spring temperatures. Apricots lead in Winters because the location against the foothills keeps off cold spring nights also. Kings county apricots grow at the bottom of the south San Joaquin valley floor (we would say on theory, not absolutely) because, though the cold air may settle there on winter and early spring nights, its settling there retards blossoming so as to avoid very largely spring frosts. The apricot can stand cold all right, and prospers where winters are severe if only it is mild when the blossoms come out. In fact, its home is on the sides of the Himalaya mountains, where it grows wild in great luxury.

With very little doubt a great increase in apricot acreage and in uniform production could be made if orchard heating were used a night or two, to overcome those frosts that without orchard heating wipe out most of the profits from apricot growing.

It is very suggestive regarding possibilities for apricots, that almonds, which are more delicate for frost than apricots, are grown extensively in places out on the floor of our central valley where apricots are unimportant, as at Durham, Butte county, one of our greatest almond districts. If almonds are a success there, why not apricots?

Just as the apricot is delicate as regards frost, so it is in other ways. It wants good soil, but above all things, it wants a sufficiency of moisture. If it suffers for moisture, not only is the crop injured, but the buds are so weakened that the crop of the following year is likely to be a failure also.

The solution for nearly all apricot troubles is largely in the kind of care that is given an orchard. Occasionally buds may fall off on account of excessive vigor of the tree. More likely they fall off on account of a slight deficiency in strength. This is so, even with frost, for stout, full buds have long been noted to resist frost more than weak buds, whether on account of inherent vitality, or better covering, it does not matter, the fact is the same. A good vigorous lot of buds not only means, therefore, that the tree bears more fruit in good seasons, but it means that the buds made fruit better when seasons are unfavorable.

Irrigation and Big Yields.

The delicacy from moisture needs is overcome by good irrigation in large part. It is clear that trees losing two crops from drouth would not lose them if sufficient and proper irrigation were given, and it is equally true that irrigation greatly increases yield. It is fair to say that in given soil and location the irrigated orchard will average twice the crop of an unirrigated orchard, and a bumper crop will be far greater on one than on the other. This is so even when the trees on the dry farmed orchard appear to be in perfect thrift and condition. Numerous instances can be found of apricot orchards in apparent thrift, but irregular and freakish in bearing, that have been irrigated heavily, given approximately the double moisture that they had before from all sources, and changed from losing ventures to big profit-makers.

The point of the matter is that the apparent freakishness of the apricot in bearing is due in nearly every instance to unsatisfactory conditions, and if apricots are given good soil, satisfactory climate, irrigation, cover crops and fertilization, their unreliability largely disappears and they bear heavily and quite uniformly, as their great vigor would lead one to expect. It is heavy production with reliable production that has given apricot growing the popularity it has in the southern coast counties.

Commercial Pointers.

Commercially dried apricots are several times as important as apricots canned or shipped. Almost the only fruit sent to market comes from the earliest districts like Winters and the Imperial valley. Apricot shipments (fresh) in 1913 were 169½ cars, as compared with 1,668 cars of plums and more yet of every other large fruit. The reason for few shipments is that the fruit spoils so quickly off the tree.

Then although far more apricots are canned than shipped green, the canned output is far below the dried output on approximately a 1 to 4 basis figured as green fruit.

A glance will show the vast possibilities of the market for dried apricots, provided the output could be increased indefinitely. The best basis of comparison is with peaches, a near relative. In the first place, apricots have a wider market; in the second place (if price is a guide), they are a more desirable fruit, pound for pound, and in the third place, the output is far less than that of peaches. Of course, if the two were to compete on the same basis, and apricot production were to catch up with and surpass peach production, prices would have to drop, and, besides, it is more expensive to grow apricots than peaches, but this comparison shows something of market possibilities just the same

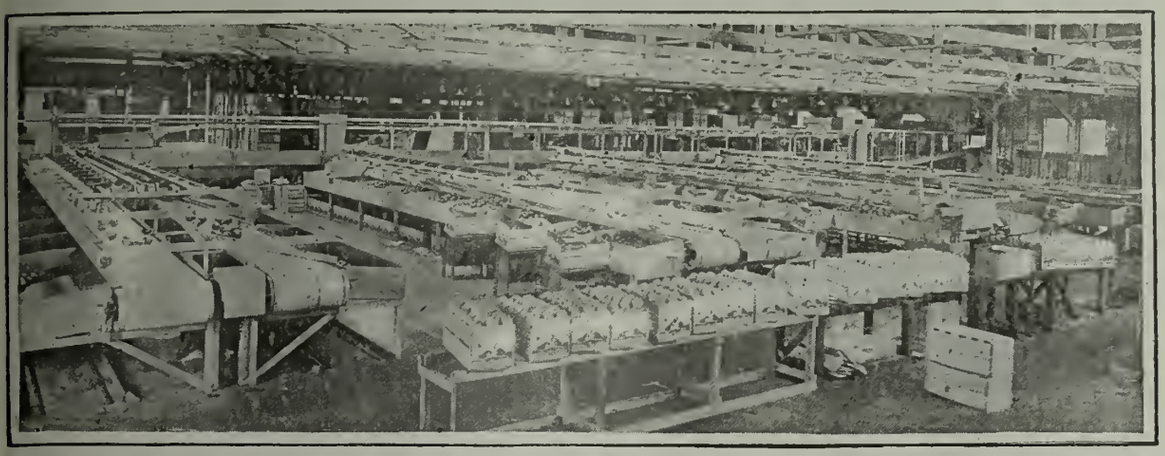
In the first place, the market apri-

(Continued on Page Ten).

Working Methods of Citrus Co-Operation

By D. J. Whitney, Editor

FAR and near the success of the citrus growers of California in the California Fruit Growers' Exchange has been held up as an example of co-operative marketing, but seldom have the working methods as far as the individual grower is concerned been considered. The public has been told of the results accomplished by the Fruit Growers' Exchange, but the methods of the citrus associations that make up the Exchange have been overlooked. It is the latter that the producer should know most about, for the associations provide the actual system of organization and are the foundation for the whole thing, but it is safe to say that few farmers out of the citrus industry know how these associations are operated and that quite a number of citrus men themselves are rather hazy regarding the details of association management.



Interior of Packing House of California Citrus Association at Ontario.

The claim is sometimes made by opponents of the Exchange that the individual sinks his individuality into that of the organization, loses his sense of responsibility, his incentive for making special efforts in producing the highest quality of fruit, and so on, but exactly the opposite is the case. There is every reason for producing the highest quality of fruit, every opportunity to gain the fullest advantage from so doing, and even the best kind of an opportunity to build up a high reputation for a special brand, provided only that there is enough fruit to justify the establishment of a packing house. The reasons for this can be seen later. In brief, the method of operating the citrus associations and the California Fruit Growers' Exchange combine the widest opportunities for individual initiative and judgment with the fullest advantage of true co-operation. It is this that has given the Exchange such marked success.

General Outline.

Before proceeding with the associations themselves it will be well to give a brief outline of the relationship of associations and the central Exchange. There are as the foundation of the system the 115 or so citrus associations found wherever citrus fruits are grown in California, perhaps several associations in the same town or by the same railroad siding. The associations of a district are affiliated together to form a district exchange, of which there are about seventeen or eighteen. These district exchanges are organized for administrative purposes and form the connecting links between the associations and the central exchange, or the California Fruit Growers' Exchange that is the real, dominant selling agency for the citrus industry.

The directors in the central exchange are appointed by the district exchanges in proportion to fruit shipped, and the directors of the district exchanges are selected by the associations. Thus it is readily seen that the associations are fundamental, and if the associations should dissolve, the Fruit Growers' Exchange by the same act would dissolve also. The growers therefore cooperate only in the associations, and the associations cooperate with each other through district and central exchanges.

How Associations Are Formed.

It is clear that as the associations are the ruling organizations, they can be governed by no fixed rules of organization, but each association is organized as it sees fit, though the method of operation must be such as will not affect the other associations that unite with it to form a district exchange. Thus several growers can form an association of their own and let anybody in, or keep anybody out. This is so whether there is an association operating in the same town or not. One man can become an association alone, provided he has the fruit to operate a packing house to advantage, that is, he can come into a district exchange on the same basis as a real co-operative association. Or two or more growers can combine in partnership or otherwise to run an association. Quite a number of the associations, for example, are composed solely of citrus growing companies who wish to keep their fruit separate from that of other growers but yet want to market through the Fruit Growers' Exchange.

There is, however, quite a definite system of operation of the real associations that make up most of the Exchange, that has proved so satisfactory that there is little variations from it when a great body of orange or lemon growers decide to co-operate in operating a packing house. It is this that will be described.

Explanation of Methods.

The best way to describe operating methods is to begin when an association is organized. A number of growers for one reason or another decide to form a new association. They organize and elect directors and other officers with authority to conduct business. The only capital will be membership fees of say $5 or $10, no stock being issued. This money will be sufficient only for incidental and organization expenses and funds for the main expense are borrowed. The banks lend this money on the notes of the association with the personal endorsements of the directors.

With the borrowed money a site for a packing house is purchased and the house erected, or an old house is purchased or leased and equipment provided. What real property is secured is mortgaged for as much as possible to relieve the directors of as much personal liability on first notes issued as possible. The association chooses its manager, joins a district exchange and is ready to operate.

In every association a certain sum is kept out from returns for fruit to cover cost of shook, packing and operating expenses, with margin for safety. An association that is in debt holds out a few cents additional per box to pay off the indebtedness and in a few years is out of debt and owns its equipment without having experienced any difficulty. Three to five cents a box is a small amount in comparison with what can be gained by good business and selling ability with the advantages of co-operation in improving the market.

All this time and even after an association is out of debt and the owner of much valuable property, the membership fee is kept at a nominal amount so that new members may join at any time or old members who are dissatisfied may drop out, which they will do if they feel that they can join again if their experience outside is unprofitable. Of course, if an association feels it has all the members it has facilities for, it can close its membership lists, but as a rule through the citrus districts a new grower can join an association when he so desires for a very small fee. The associations also can join the Fruit Growers' Exchange or drop out at the close of a season, as they see fit. Large growing and shipping companies are continually joining the Exchange, and occasionally one drops out to go it alone.

Internal Operations.

The fruit of an association is sold in pools, all fruit turned in during a certain period when it is figured that the market should be in about the same condition, being sold together after grading for quality, and the returns divided among the growers according to the amount of fruit in the pool. A grower hauls in a load of fruit, which is weighed and the boxes tagged with a certain number. All that fruit is graded without the graders knowing whose fruit it is, and a record kept of amount of first, second and third grade fruit, and culls, and when the returns are in, payment is made according to grade. Thus, if it is profitable to go to extra expense to produce high quality fruit, a grower feels repaid in producing the finest fruit possible, and no matter how much poor stuff goes to the association from other growers, it does not lower prices received by him.

There may perhaps be a difference of opinion as to advantages in severe grading, and in this case a grower can join an association that grades severely, or loosely as the case may be. As each association sells the fruit under its own brand, grading methods are optional, though there is more or less supervision from the district exchanges and for the benefit of all, the "Sunkist" stamp of the Fruit Growers' Exchange is kept from the poorest fruit.

If a man wants to keep his fruit separate from all others and build up a reputation for extremely fine quality, he can run his own packing house, have his own brands, say whether his fruit shall be sold f. o. b. or on the auction markets and to whom. This he does through the district exchange, though the Fruit Growers' Exchange sees that the markets through the country are developed uniformly and that too much fruit is not shipped to one section. Through this it is clear that a grower and shipper can have as much opportunity of developing a reputation, and exercising judgment in marketing when he is a member of the exchange as when he goes it alone, and in some ways more opportunity, as he has a wonderfully proficient set of men attending to the markets for him. The exchange, or its paid agents, actually sell no fruit at all. They simply get the best offers possible and the associations accept or refuse them. Then the agents attend to the details of the business.

Marketing Costs.

The total charge usually made for shook, packing, selling and everything else is 40 cents per box, the f. o. b. price being returned to the grower, after that amount is removed. At the close of the season what is not spent is returned to members in proportion to boxes of fruit sold. The cost may be as low as 25 cents a box, average for the season, and it may run nearly to the full amount, but averages in an ordinary association about 30 to 32 cents one season with another, the grower getting a refund of from 8 to 10 cents a box.

The California Fruit Growers' Exchange charges the associations a certain amount per box, including a margin of safety, and at the close of a season refunds the associations all funds remaining above expenses. Nowhere are there dividends, and everything above actual expenses comes back to the grower. The cost of selling averages about 7 and a half cents a box, covering all the expenses of the California Fruit Growers' Exchange proper, including extensive advertising.

The exchange also established a Growers' Supply Company as a subsidiary institution when it found that costs for shook and other supplies were mounting too high. This is a stock company with capital of $1,000,000, the stock being owned by the associations, not by individuals. The company owns its own timber lands and manufactures its own shook, selling to the associations at cost price. Before this was started shook cost about 20 cents, now it stands the grower about 13 cents.

It is through the Exchange and the associations that make it up that the citrus industry has prospered, so that instead of producing oranges at disastrously low prices with an annual output of 4,000 cars a year, ten times that amount can be disposed of at prices that have given California citrus groves world-wide fame.

Some Timely Hints for the Fruit Men

TWO very important subjects deserve the attention of the deciduous grower at this time, or in the near future. One is the thinning of fruit, which is an important matter in many varieties and something that every fruit man with experience knows about. The other is the removal of young shoots that will be removed anyway when pruning time comes around. This is a thing seldom practiced by fruit growers, but it is an excellent idea, especially on peach orchards. Reasons and methods will be discussed later.

Thinning is most urgently required in general this year, though there is a difference in different sections. As a rule the fruit crop is heavy, and a heavy fruit crop means two things; first, that small sizes are very likely to result; second, that prices for small sized fruit are likely to be bad and a special effort should be made to get large fruit.

It should be realized also that little or no loss in yield is likely to result from proper thinning. The tree simply puts the same effort into a fair amount of fruit that it did in a large amount of small fruits, largely making up in size what it loses in numbers; furthermore, there are fewer pits to form, so what would have been pits becomes flesh, and flesh is the thing that counts; also, pits provide the greatest drain on the tree so it is easier to make flesh than pits and actually there is as much, or nearly as much energy and perhaps more, to go into flesh as when no thinning is done, and certainly the quality of the flesh of the fruit is vastly superior and more valuable from trees with a normal crop than from overloaded trees.

Some definite advantages of pruning follow: The cost of picking, cutting and drying large fruit is so much less per ton than for handling small fruit that the cost of thinning is insignificant. Thinned fruit, through better spacing, to say nothing of reduced weight, is less likely to break a tree, nor will it sunburn as much. A ton of large fresh fruit on account of the less proportion of pit will dry much heavier than a ton of small fruit, say 400 pounds dried in place of 300 pounds. The extra price of large fruit per pound, dried or otherwise, more than makes up for all expense and leaves the other advantages all to the good. The tree is left in much stronger condition after bearing a crop of well thinned fruit than after a too heavy crop of unthinned fruit.

Thinning should be done after the first drop due to lack of pollination has taken place and after danger of frost injury is past. The sooner it is done after this time the less unnecessary work for the tree. Ruling factors in spacing are distance, strength of tree and strength of wood or twig to hold up fruit. What is the proper spacing under one set of conditions is unsatisfactory under others. Fruits should be far enough apart to permit proper development and coloring. After this is done, a tree on rich soil with lots of moisture and in fine growing condition can produce many more fruits than a tree with less vigor, while a twig or small branch that is thick and sturdy can produce more than slender and less strong wood.

As a rule it is better to remove fruit when in doubt than to let it remain, for heavy thinning means only still larger and finer fruit, and too little thinning means a surplus of small sized inferior fruit. Inexperienced thinners are likely to do the latter rather than the former.

All of the larger fruits can be thinned to advantage when the set is heavy. Prune thinning is unusual, but on account of the premiums for large sizes, opinion of its advantages is growing and if a person has the time there can be no loss and some probable gain by thinning as many trees as one has time for.

Rubbing off suckers, from peaches mainly, but also from other kinds of fruit trees, is highly desirable as saving labor, as a means of taking more advantage of the strength of the tree, and as a means of encouraging fruiting and satisfactory wood growth by letting light and air into the center of the tree. The proposition is mainly to decide upon what shoots, largely from the main branches, would be cut off completely when winter pruning is done and then to rub them off with thumb or fingers. Needless to say, this can be done a whole lot quicker than the pruning required later. A man can go over a full sized peach tree in about four minutes. Such suckering is done in the San Joaquin valley on orchards where it is practiced about May and June, sometimes the trees are gone over twice a month apart, sometimes only once. On the big majority of orchards the practice is ignored.

When unnecessary suckers come out on the lower branches they shade the fruit so that it is not borne plentifully and is poorly colored. The shade also makes the wood thin and weak. When all unnecessary suckers are rubbed off, those that are left are good and strong for next year's work and the fruit the same year is better.

It is claimed that a tree is much better on account of not having to produce a lot of wood that only has to be removed the following winter.

The suckers can be removed at any age. It is better to rub them off early, but all right to remove them when they are so far along that shears are needed. This kind of suckering can be done on any kind of plant where the whole shoot would be removed in winter pruning. E. H. Erickson of Brawley rubs off all shoots on his grape vines that he has no use for and considers it a fine thing for the vines and a saving in pruning the following year.

REASONS WHY

YOU NEED A TRACTOR AND THE RIGHT KIND OF A TRACTOR

IN THE ORCHARD it obeys the hand, cultivating as deep and as close under the over hanging branches as you will, without the damage done to trees with horses.

ON THE ROAD it runs on solid rubber tires at any speed from two to eight miles an hour pulling as much as three teams — twice as fast.

WHILE AT REST it eats nothing, NO feeding-NO watering-NO stables to clean. LESS work-LESS worry-MORE pleasure and MORE PROFIT.

IT IS DOLLARS in your pocket to cultivate deeper, giving the tired surface soil a mixture of its richer self beneath —

THE LAMBERT STEEL HOOF TRACTOR

Ask for Catalog -"EE"

S. J. SMITH

Dept. "E E" 228-238 Central Ave. Los Angeles, Calif.

EXCLUSIVE DISTRIBUTOR FOR CALIFORNIA-ARIZONA - NEVADA.

READ-MILLER CO.

A Great Fruit Growers' Convention

THE semi-annual California Fruit Growers' Convention has been announced for June 1 to 6, at the University of California Farm at Davis, Yolo county, and deserves more notice than any fruit growers' convention called thus far. It will be held on a different and more elaborate plan from the ordinary convention, will be of great interest and profit and should gather together an extremely large representation of fruit growers from all over California.

The average fruit growers' convention meets for three days, this meets for a week. The ordinary convention is held under the auspices of the State Horticultural Commission; this will be conducted by both the commission and the Yolo County Board of Trade. As it is held at the University Farm, the College of Agriculture of the State University is making effort to make the convention a big success, so far more is being done than could possibly be done ordinarily.

Special accommodations are also being provided for visitors by the Farm management. Meals and room will be provided for $2 per day, or meals and cot for $1.50 per day. Excellent facilities for camping will also be given so that fruit growers can come with their families in automobiles or otherwise and camp out if they so desire.

The plan of the convention is something that is very attractive and arranged to be of great value to fruit men of all interests. There will be parts of the programme to employ persons with special matters in mind and something going on at all times of value to everybody. That is, instead of having only one gathering at a time, there will be several sessions going on continuously during the day on definite subjects. In the evening addresses will be held on general topics to interest everybody. Among those scheduled to speak are Governor H. W. Johnson, E. H. Shepherd, Prof. U. P. Hedrick, A. D. Shamel, G. W. Luce, C. H. Bentley, Prof. E. D. Ball, Prof. R. H. Forbes, and others. Altogether there are to be 150 separate lectures.

Among the important subjects to be considered are. Co-Operation, Irrigation, Insect Pests, Frost Fighting, Opportunities for New Settlers, Soil Handling and Fertilization, Spraying Materials and Apparatus, Pruning, Intercropping Young Orchards, Marketing, Utilization of Surplus and Waste Fruit.

All of these subjects will be considered on each day of the convention, plenty of time being given for discussion. In the general subject of co-operation, for example, the California Fruit Growers' Exchange will be discussed one session, the Cured Fruit Exchange another, also co-operative methods in general.

There also will be sessions at which apple culture, or the culture of some other fruit can be discussed from all angles by those interested. A great number of special lectures will also be given. A complete announcement of the programme and of the plans for the convention can be obtained by application to the University of California at Berkeley.

One of the most important subjects to be taken up is that of the proposed Eight Hour Law, to be voted upon at the next general election. The unanimous agreement among farmers that this law would be disastrous to the agricultural interests of California makes it essential that the facts of the matter be clearly understood throughout the State. The convention gives opportunity for a clear statement of the facts of the case from an agricultural standpoint by the largest and most representative body of farmers that could be obtained and quite probably a number of labor leaders will be present to state their views and hear the farmers' side of the matter. The convention should arouse great interest from this thing alone.

Summer conventions of the Fruit Growers have not brought out a very big attendance, but the importance and value of this will apparently make it a record breaker. Everyone that can attend certainly should do so.

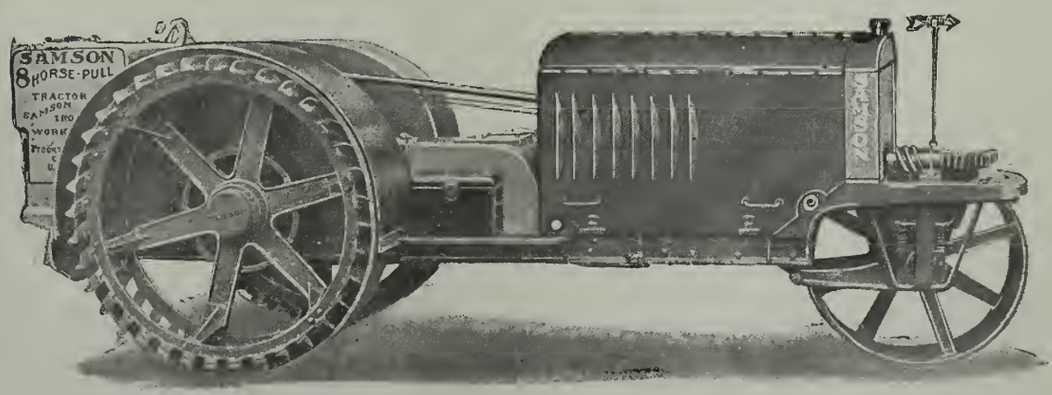
DO NOT FAIL TO INVESTIGATE

AT THE SACRAMENTO DEMONSTRATION

Held under the auspices of ORCHARD AND FARM

May 7, 8, 9, 1914

LOOK FOR



SAMSON *Sieve-Grip* TRACTOR

The Only Wheel or Track in the World That

DOES NOT PACK THE SOIL

There Are Many Other TRACTOR IMPROVEMENTS about it WORTHY OF YOUR ATTENTION

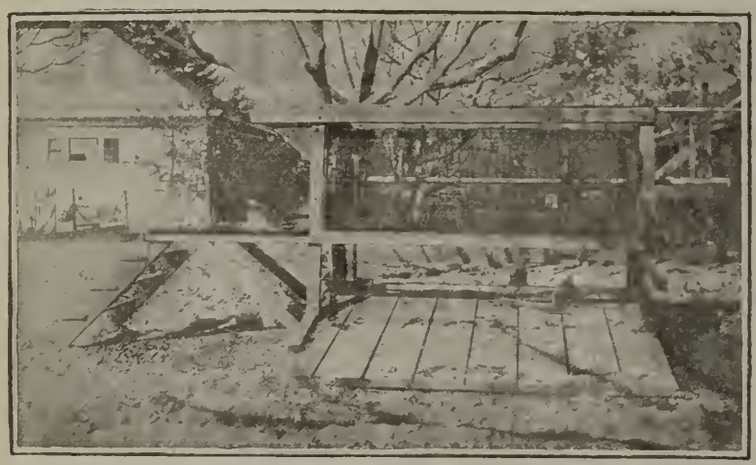
If you cannot go, write us for Catalogue O. A.

SAMSON IRON WORKS, STOCKTON, CAL.

An Effective Walnut Huller

By Charles H. Meiers

THE hot wind which brought discouragement to the English walnut growers of Southern California last year by drying the hulls so tightly on the nuts that they could not be easily removed by the old method of hand-hulling—was a blessing in disguise. It established the necessity out of which grew the invention of a hulling machine, which is now in general use and which does the work of fifteen men.



A Simple and Effective Walnut Huller.

The machine is simple in its construction, and is not expensive. It is not patented, and the growers use some individuality in putting it in for their own use. Thus, while the same principle is used in all of the cases, there are numerous variations in smaller details.

A heavy wire drum is built in a circular frame, three feet in diameter and eight feet long. The frame is built of hardwood material, 2x4 scantlings being used. These are securely bolted together. Boards, cut in circular shape, are used in the ends. Strap-iron hoops are used in the center of the drum to strengthen it. From these hoops angle irons extend to the center of the drum, where they are fastened to the shaft, which is a two-inch gas pipe. To this shaft, at one end, is attached a cog wheel, on which runs the chain that turns the drum. Power is furnished in some cases by gasoline engine and in other cases by electric motor.

There is a perforated gas pipe installed above the drum. This furnishes a means of sprinkling the nuts as they are being turned rapidly in the drum. The sprinkling loosens the hulls and softens them, so that the friction removes the hulls.

The nuts are poured into the drum through a chute at one end. Five sacks may be emptied into the drum at a time, and the average day's hulling (ten hours) is about 100 sacks. Two men can do this work; whereas it would require fifteen men to do the same work by hand.

One grower built the frame-work himself, putting in the pulleys and other fixtures, for $25. He then paid a blacksmith $35 to make the drum for him. He has a plank floor under the machine, which forms a good scooping surface in shoveling up the hulls. He installed an electric motor, which cost $90. It is a one-horse affair, which he uses in many other ways besides operating the huller, and for this reason he does not charge its cost to the equipment of the huller altogether.

This grower, who is J. N. Osborn, Orange county, says that he did enough hulling for neighbors after he put in his machine last year to more than pay for it, besides hulling his own crop of seven acres with it. He estimates the cost of operating the machine at not more than $1.50 a day for power.

Peanuts in Sonoma County

We have about an acre and a quarter of land that we had planted to oats, but high water came and washed all of our oats away, so we would like to plant peanuts now, as it is very sandy loam. We would like to know how to plant peanuts and how many pounds to use to the acre.—G. W. S., Healdsburg, Cal.

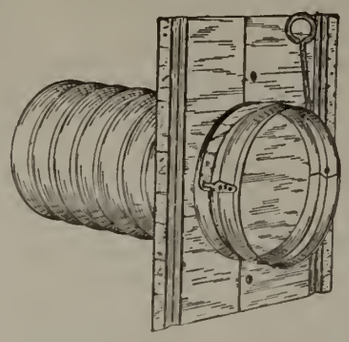
You should be in no hurry to plant peanuts, as they are quite susceptible to cold and the time of planting is about what you should choose for planting Indian corn.

They are planted in rows about three to four feet apart and eighteen inches apart in the row, being covered three or four inches deep. If planted too early they will ripen unevenly, but if planted so that they can grow steadily and well they will ripen uniformly. It takes about thirty pounds of the California or White Virginia to the acre, or fifty pounds of the Tennessee Red, which is planted closer together. The latter is not usually as desirable a variety.

Sandy loam, such as you have, is good peanut land, but the soil should not be too damp and should be well drained. The ground should be kept loose and well stirred and free from weeds. After the spikes begin to form and the peanuts start the vines should not be disturbed. The nuts should be harvested when ripe, as if left in the ground in hopes of a larger crop the earliest nuts will fall off largely in quality and later formed nuts will be small and of small value.

The San Joaquin Valley is the leading section of California for peanuts, though not many are grown even there. We have an idea that Indian corn would be more profitable for you than peanuts, although peanuts are a good crop. As long as you are unfamiliar with the crop and in a part of the State where few are grown, if any, it might be well to plant only a small patch for experience. Will be glad to know how you come out.

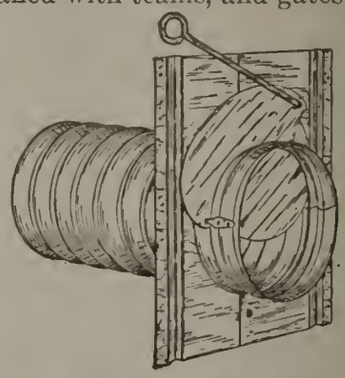
The farmer who arranges his work so as to be busy all the year round and to keep his men busy all the year round is the man that gets the largest profit and has the least trouble with help.



4-C Irrigation Gate

Reduces labor of irrigating.
Easy and quick to install or move to new location.
Does not wash out.
Saves water and stops scalding of crops.
Can be removed, ditches cleaned with teams, and gates replaced without loss.

DURABLE because made from **RUST RESISTING AMERICAN INGOT IRON.**



Five other types of gates. Culverts, Siphons, Flumes, Stock and Water Troughs.

Write us.

CALIFORNIA CORRUGATED CULVERT COMPANY

Los Angeles West Berkeley

FEW farms, ranches, vineyards, orchards or garden patches in California are without Oliver Plows.

Oliver Plows are known to be right and are accepted as the best by the users of plows in California and consequently their sale far exceeds the sale of all other plows on the Coast.

An individual reputation attaches to each particular style of Oliver Plow. Merit and worth have created this reputation. OLIVER STEEL PLOWS equal in merit and value the world-famed Oliver Chilled Plows that are pre-eminent, preferred and duplicated by our competitors in an awkward attempt to produce something just as good. When we cease to design and go to imitating, we will go out of business.

Engine Plows

Our TRACTOR GANG occupies the enviable position of meeting every requirement in its own exclusive way and maintains the Oliver reputation for advanced ideas and successful results. The Oliver Engine Gang is guaranteed to do its work right or no sale. Prices will be quoted and full details furnished on application to the

Oliver Chilled Plow Works San Francisco

MAKERS OF

California's Favorite Plows

Oliver Plows will be in operation at the West Sacramento Demonstration May 7, 8 and 9.

The Selection of a Pumping Plant

A circular of the University of California has just been issued on the selection and cost of a small pumping plant. It is a subject, of course, that requires a great deal of attention, and many things have to be considered in making such a selection. A person can get the circular on request and study it in detail, but the following will show in brief what are the leading features of the problem.

Granting at the start that the water is available at some depth or other and in greater or less supply, the starting point of the whole proposition is to know how much water is required in terms that will indicate the capacity of the pump. The factors here are: Area, nature of soil and kind of crops grown. The more land there is, the more water needed; some crops take more water than others; and light soil requires more water than heavy.

For an average loam soil a total depth of 12 inches of water during the irrigation season will be sufficient for young orchards. For a full-bearing deciduous orchard 18 inches, and for a citrus orchard, 24 inches should be ample, while for alfalfa and other forage crops 24 to 36 inches is plenty.

Bu careful irrigation and thorough cultivation a young orchard on fairly deep retentive soil may not require more than 6 to 9 inches of irrigation water, and a full-bearing orchard not more than 12 or 15 inches for deciduous trees and 18 inches for citrus trees during the irrigation season.

To put a depth of 2 feet of water on one acre, it takes a flow of very nearly 1 cubic foot per second for 24 hours; this is equivalent to 450 U. S. gallons per minute for 24 hours. It would require 225 gallons a minute to irrigate a 20-acre ranch 6 inches deep every month, the plant operating 8 hours a day. From this it can easily be figured the flow required for any definite depth of any acreage and with any required period of operation.

Small vs. Large Plants.

Often there is a question whether it would be better to have a small plant that will supply sufficient water only by operating continuously, or to have a large one which will be operated only part of the time. Naturally to get a given amount of water, the larger a plant, the less time needed for pumping.

As a rule it is advisable to select a larger plant than would barely do if operated continuously. This is especially true where a stream would be too small for effective irrigation. Other disadvantages of continuous operation are:

It requires continuous irrigation and constant attention to the plant. A regulating reservoir can be used, but this is usually expensive or gives considerable loss by seepage. Continuous operation gives a small stream which cannot be applied economically. It means that water can not be applied to all parts of the land within a short time, so that only a small part of the places receives the water when most needed, and the remainder must be irrigated either too early or too late. Likewise a small plant is less efficient and requires more fuel than a larger plant to pump the same quantity of water.

On the other hand a small plant is less expensive than a large one, and depreciation and cost of replacement will be less. For a large plant a good flow of water in strata will be required, and frequently there is enough water to supply a small plant when there will not be for a large pump. Or a large plant may lower the water table so that the extra lift will offset other advantages. And one of the most important features as far as electric power is concerned is that special rates are commonly given for continuous use, which makes small plants operating continuously the most economical as well as least expensive to install.

Capacity of Pumps.

Knowing how many gallons per minute is desired, it next remains to find the kind and size of pump that is best for the conditions. The leading types of pumps used, depending very largely upon the amount of lift or conditions of pumping are: Centrifugal pumps (horizontal or vertical), power plunger pumps, deep well pumps and air lift pumps. There are also hydraulic rams, where a lot of water lifts a lesser amount. The latter need not be considered here.

The old style, or horizontal centrifugal pump, is for small lifts as a rule and where the pump can be placed close to surface of water so that when the pump is in operation the water table will not drop much more than 20 feet below the pump. Vertical centrifugal pumps are used where lifts are large, no pit being required. Double centrifugal pumps are also available for high lifts, but need to be in a deep pit, or so that they are close to surface of the water.

Usually centrifugal pumps are not satisfactory if the water has to be forced very high above the pump. In such a case, provided the water level is near the pump, power piston or plunger pumps are used.

For deep wells up to a lift of 350 feet deep well pumps are employed, the capacity ranging from 115 to 1,000 gallons per minute. Centrifugal pumps of special design can lift over 100 feet, but 50 feet is about the limit for small size stock pumps and 75 feet for larger sizes.

Air lift or compressed air pumping plants are operated by air pressure, both air and water being forced up. They are best adapted for pumping from several wells not further apart than half a mile and where the wells are sufficiently deep to allow proper submergence. For usual conditions either centrifugal pumps of one or another design are employed, or power plunger or deep well pumps, each having a clear enough kind of work.

Thus it is seldom difficult to decide whether an horizontal or vertical centrifugal pump is best, a power plunger, deep well or air lift pump. Ordinarily, when it is simple pumping from ordinary well to the surface of the ground the choice rests with ordinary centrifugal, vertical centrifugal and deep well pump, depending mostly on amount of lift. After a certain lift is reached a choice can be made between vertical centrifugal and double centrifugal pumps, depending on advisability of sinking a deep pit, and when a still greater lift is required there is a choice between vertical centrifugal and deep well. The size of pump for a given flow is still a problem which space forbids consideration of here.

Bulletin on Orange Handling

The Citrus Protective League has issued a bulletin on the Decay of Oranges. It is largely a summary of a United States Department of Agriculture bulletin on Factors Governing the Successful Shipment of Oranges from Florida. The investigations verify all discoveries in California which resulted in the saving of a large percentage of fruit which used to decay in shipment and the bulletin is a good reminder to every citrus grower of methods that should rule in his grove.

The modern farmer, the man who is an agricultural scientist — who makes every inch of ground space produce to its maximum earning capacity—the man who is looking for every device which will enable him to cut down operating expenses and labor necessary to produce a crop, will be in Sacramento May 7, 8 and 9.

Manufacturing and other industries have always demanded improvement in existing methods — improvements that would cut down cost and increase speed of production.

The farmer has been one of the last producers to adopt this policy. He is now awakening. The California farmer has made faster strides in improvement than any other.

THE YUBA BALL TREAD TRACTOR

is designed to give the farmer the most improved, the most efficient and the most economical form of motive power for use on the farm, on the road and in stationary work.

The Yuba Ball Tread Tractor is built by a concern which has been building gold dredges and high duty drainage and irrigation pumps for the past decade. The largest gold dredges have an earning capacity of $1,000 per day. Delay caused by the breaking of a faulty part or some other mechanical imperfection becomes enormously expensive. Possibility of such delay must be eliminated. The same engineers and the same mechanical organization that builds Yuba Gold Dredges to eliminate this expense, is building Yuba Ball Tread Tractors. They build them to stay built.

On May 1st our booklet, "The Yuba Ball Tread Tractor," will be off the press. It is well written, well illustrated and easily understood. We believe it one of the best books ever published on the subject of tractors. In order to get your copy without delay, send a letter or postcard to-day.

THE YUBA CONSTRUCTION COMPANY
Dept. C.
433 California St.
SAN FRANCISCO
Works:
Marysville,
Cal.

Commercial Aspects of the Apricot

(Continued from Page Four).

cots have a world market, peaches little more than a domestic market at present, though something about that matter will be spoken of in a later issue. (In theory the opposite might be considered more likely to be the case.) Of our dried apricots the general estimate is that 70 per cent of the crop goes to Europe, leaving rich America to eat only 30 per cent. The best figures obtainable show about 60 per cent, or roughly, 9,500 tons exported per year the last few years, with the demand increasing rapidly. The California production in 1912 was given at 40,000,000 pounds and exports for 1912-13 (single year) at 35,000,000. The production of 1911 was 22,000,000 pounds and exports 1911-12 13,000,000 pounds, which is about typical. Only about 10 to 13 per cent of dried peaches are exported, or about 2,300 tons a year, far less than apricots in spite of greater production. It is, therefore, apparent that if we could enlarge our apricot output immeasurably we would have a most excellent European market to fall back upon.

This leaves our domestic markets greatly undersupplied with apricots, as there remains only about 6,500 tons left to be sold in America, while about 20,000 pounds of peaches reach domestic markets a year or remain unsold.

Granting that apricot prices are higher than peaches, this certainly shows a vast opportunity for development of domestic markets to increase consumption if necessary. Furthermore, little apparent excuse is left for the wide variation in apricot prices different years. A big drop in prices owing to big crops simply means that little is done to put the extra fruit into domestic consumption, not that there is a legitimate (though temporary) over supply. In the past three years apricot prices to the grower have been for good periods at from 12 to 14 cents, and again at about 8 cents, sometimes lower.

One unfortunate thing about the industry is the problem of handling the crop. The fruit ripens in a very short time. If picked too early the product is inferior. If left a little too long, the fruit is a mush and with a big crop a large force is kept very busy for a short time. Some men are better fitted than others to manage a crop and these find apricots a big success in suitable locations. Others are unsuccessful in hiring men and have dug up good bearing orchards because they could not get the crop attended to. The average man finds apricots a problem in many places and there are many acres in other crops that would be in apricots if the fruit were easier to handle or the labor question better. All the same, unless there is something extremely good to take its place, a fruit grower will jump at the chance to set out apricots where he knows they will do well.

And apricots will do well. There is not a stronger grower, not a better, or equal bearer among deciduous fruits when it is at its best, and by getting it to bear heavily and uniformly a person can afford a big expense of handling and sell at very moderate prices. Without any doubt, practically all the unreliability of the apricot can be overcome on a good location, right soil with the irrigation, fertilization and care that any man can give. As long as the apricot has such wonderful capacity for production suitable conditions make it a wonderful bearer, and this fact, with that of the excellent quality of the product, is the leading feature of the whole proposition. We may never have the apricot amount to much outside of present recognized apricot districts, but there are reasons for believing that we may. The proposition is worth considering.

Motto for Every Morning

Turn Failure into Victory,
Don't let your courage fade;
And if you get a Lemon
Just make the Lemon Aid.

A Jag for Sparrows

Both in the country and city alike the English sparrow makes himself at home and is a decided nuisance. They are exceedingly keen and suspicious of any sort of trap.

The latest scheme has been to steam oats or wheat until soft and then soak in alcohol or whiskey for a couple of hours and scatter the grain where the birds will find it. They soon become helplessly intoxicated and are easily caught.

The grain must be scattered, for if placed in piles the birds suspect a trap and will avoid it.

Now, that bounties are paid on sparrows, one could easily make some money in a few hours, as well as protecting their gardens or fields.—MRS. STELLA HAGGARD, Occidental

---

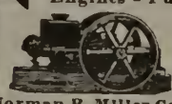
In the same issue with the announcement that the city of Richmond voted wet, the Earlham College Press runs a story with the head, "Skate Proves Success."

PLANT ECONOMY=DOLLARS

You Can't Save Money When You Throw It Away on poor equipment. The best costsless in the end. The best bought of us costs no more than the inferior of others. Thats the way we do business. Just write for our catalog. It will prove our statement.

Engines - Pumps - Motors

ENGINES



A dollar well spent is a dollar made. Be careful before buying.

Norman B. Miller Co. San Francisco, Cal.
701 HOOKER & LENT BLDG.

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT, with List of Inventions Wanted and Prizes offered for inventions, sent free. PATENTS ADVERTISED. WANTED—NEW IDEAS FREE

Send for our list of Patent Buyers.
VICTOR J. EVANS & CO.,
Washington, D. C.

New! This Support for the Scroll ! ! ! !

This new feature is of greatest importance. It relieves the tremendous strain on the center shaft—eliminates the tendency to bind—reduces friction to a minimum and makes a decided difference in the efficiency of the pump. Found only on

Bean Centrifugal Pumps

In addition to this new feature, we call your attention to other Bean advantages—

AUTOMATIC WATER BALANCE—the most perfect balancing device ever put onto a centrifugal pump;

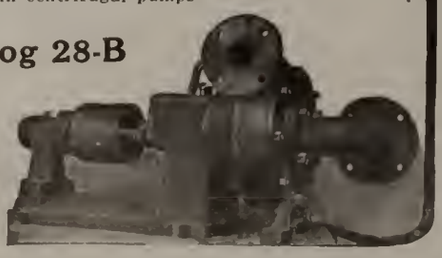
WATER SEALED STUFFING BOX—which makes it unnecessary to tighten stuffing box nuts excessively. The water makes an air-tight seal.

ADJUSTABLE SUCTION AND DISCHARGE. Note the illustration. Easily and quickly turned to any desired angle.

RING OILING BEARINGS—another desirable feature. If you are interested in centrifugal pumps

Send for Catalog 28-B

It describes all Bean horizontal and vertical pumps. For deep well pumps, power heads, windmill pumps, house pumps, etc., get Catalog 28-B. Write to us about your irrigation requirements.



BEAN SPRAY PUMP CO.,
225 W. Julian St.
San Jose, Cal.

Knox-Martin Tractor

Will save you money in hauling your crops or working on your land.

PULL YOUR LOAD—DON'T PUSH IT!

Pull it—with the Knox-Martin Tractor. You can handle 100% greater loads than a motor truck with a Knox-Martin Tractor, using the same power.

The Knox-Martin Tractor is a motor unit that may be attached to any vehicle designed to be drawn by horses. Another point—it uses less rubber tires than the motor truck and actually transports the same load as a motor truck with only one-half the weight per tire.

Hence one source of GREAT ECONOMY—reduced tire wear and tire cost.

Shrewd contractors are "tractorizing" their business, and they're investing in Knox-Martin Tractors. Send today for catalog and valuable booklet, "Trucking Costs."

Distributer:

Reliance Automobile Company

SAMUEL M. CRIM, President and General Manager
Reliance Building, 1529-1541 Van Ness Avenue.
Tel. Franklin 9450 San Francisco, Cal.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

How Uncle Sam Kills Squirrels

WHEN Uncle Sam starts in to do anything he generally does a good job and Uncle Sam through the Public Health Service has been working against squirrels in a number of Central California counties. The excuse is bubonic plague occasionally found in squirrels. As good a reason is the fact that squirrel killing is a big thing for the farmer, whose grain is eaten by the rodents. The Public Health Service is working in the following counties and has secured practically the percentage of eradication given, that is, that percentage of squirrels has been killed: Alameda, 90 per cent; Contra Costa, 80; Santa Clara, 95; Santa Cruz, 90; San Benito, 75; Monterey, 40; Merced, 40; Stanislaus, 40; San Joaquin, 85.

On account of this wide and systematic work knowledge of methods has been developed that private individuals could hardly gain alone. It will be found that by employing these methods great success in squirrel control can be secured.

Poison was the first important agency in squirrel destruction and was quite satisfactory as from 85 to 90 per cent of the squirrels were killed. To have complete construction co-operation by the squirrels is necessary and 10 to 15 per cent will not eat the poison, or eat so little that they will survive and touch it no more. Four or five applications of the poison are needed, all in the dry season, total cost being 40 to 50 cents an acre as an average.

Carbon bisulphide applied by the waste ball method has been another standard method. By this method a ball of cotton waste dipped in carbon bisulphide is inserted in a hole and either left or ignited. Either way the fumes kill the squirrels. The method can be employed only while the ground is damp and kills something better than four out of five squirrels. The cost averages 60 to 75 cents per acre.

The surgeons in charge of the work: J. D. Long, D. H. Currie and Friench Simpson, were still a little unsatisfied with all these methods and devised a "squirrel destructor," or apparatus by which fumes could be forced into a squirrel's hole. This they patented, throwing the patent open to the public so that destructors can be obtained from various sources for simply cost of manufacture and selling. Carbon bisulphide, or one of the manufactured preparations having it as a basis, is used. The Public Health Service, in fact, uses the commercial preparations rather than straight bisulphide.

By careful investigation the amount of space needed to fill with gas per squirrel hole was found to be 14 to 15 cubic feet. An ounce of material will provide the gas for this. It is let into a small chamber and air pumped through it, thence into the hole, which is stopped up so that the gas charged air will not escape. On account of pumping, this aid is forced all through the squirrel burrows, replacing the air previously there. It is twice as strong as necessary to kill the animals, which permits a mixture with the air still in the hole. It is still not strong enough to be explosive and, besides, can be used at all times of the year. On account of being pumped into the hole it goes all through it as carbon bisulphide in waste ball method will not do, giving 98 to 100 per cent eradication.

The cost for material, labor and all averages only 2¼ to 3 cents a hole, or 28 cents per acre, making it the cheapest as well as most effective methods of those named. One treatment is all that is usually necessary, but it has been found that when any squirrels escape, they gather together in colonies of from three to six, so that they can be found readily, having opened the holes again, and these can be destroyed with another dose of gas. In this way absolutely complete eradication is possible and over considerable areas has been secured at nominal expense, not only saving crops by killing a big proportion of the squirrels, but being permanently effective by leaving no animals to start famililies.

Even where a squirrel or so has been left in a big area, the chances of their destruction by natural foes is so much greater than before that eradication may ensue naturally.

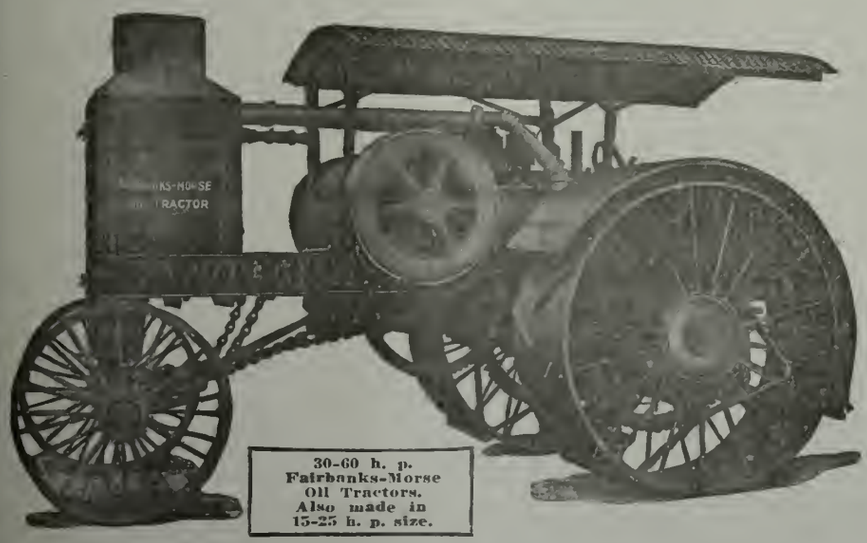
The Public Health Service is waging no war on gophers, for the gophers don't get the bubonic plague as far is known, but whenever gopher infested fields have been treated for squirrels, an attack has been made also on gophers, for exactly the same rules of treatment hold. Trapping and poison needs help from gophers as it does from the squirrel and some gophers will escape, but poisonous fumes forced all through the burrows kill the gophers as they do the squirrels.

Causes of Die Back in Cherry

One of the most puzzling features of cherry growing is the habit of the cherry tree of dying back, often without any apparent reason or excuse. Actually there quite probably is reafor this, or for gumming, which is closely related to die back, though the cause may not always be apparent. It is pretty certain that die back will not occur to more than a small degree, if at all, if the physical condition of the soil is entirely satisfactory and there is sufficient plant food, for the cherry, though a strong, vigorous grower, insists upon having rich, deep soil of proper texture and with right moisture supplies and the best of drainage. Two of the greatest causes of die back are an excess of moisture and a deficiency of same.

Where the drainage is not good and water stands over the roots during winter or otherwise for any length of time it is likely to kill off the root hairs and the roots become sick and the nourishment of the top is so affected that the tree dies in part. On the other hand, if the ground dries out so that many of the root hairs suffer, that also will cause die back. The exhaustion of humus in the upper layer of soil, so that the physical condition suffers, is also believed to be an important reason for decadence of cherry trees. In theory the trees will keep in first-class trim if the water does not stand over their roots in winter or otherwise, if by irrigation or otherwise the ground is well supplied with moisture and if by the growing of cover crops or the addition of plenty organic fertilizers, including barn-yard manure, the surface is kept well supplied with humus and in good physical condition. Actually, however, when a cherry tree starts to die back it seems practically impossible to prevent it from continuing to do so.

Some people seem to have a faculty of making two weeds grow where one grew before.



30-60 h. p. Fairbanks-Morse Oil Tractors. Also made in 15-25 h. p. size.

Save Money by Using Low-Priced Oils

Fairbanks-Morse Oil Tractors more than pay for themselves by the reduction they make possible in fuel cost. They operate equally well on kerosene, gasoline or distillate, and lower grade oils. Considering a cost of 8 cents per gallon for distillate and 3 cents for oil, a saving of over 60 per cent of fuel cost is easily possible. You make $37 worth of oil take the place of $100 worth of distillate.

Fairbanks=Morse 30=60 Oil Tractors

The Pulling Strength of 30 Horses

and 60 horsepower at the pulley is under Perfect Control of one man. Two-cylinder engine has throttling governor—no undue speeding up of engine when load is suddenly thrown off. Made simply—strongly—is easily accessible. All parts made on interchangeable system. Every engine guaranteed.

—Labor Savers the Year Round for

Sawing Wood	Pulling Stumps	Harvesting	Grading
Cutting Ensilage	Hauling	Threshing	Discing
Baling Hay	Plowing	Hulling Clover	Harrowing
Grinding Feed	Pumping	Shredding Corn	Seeding

Write for Catalog 6G652

Fairbanks, Morse & Co. 651=655 Mission St., SAN FRANCISCO
423=429 E. Third St., LOS ANGELES

A Page of Farm Problems

TRANSFER OF REGISTRY PAPERS—I have purchased a Holstein cow and was told that her register papers could be had by writing to a certain company. Have written and received no reply. Could you enlighten me how to proceed in securing her papers? In her right ear is a steel band with the following: P. J. van L. S. 247.—J. M., Lodi, Cal.

Would advise writing to Holstein-Friesian Association, F. L. Houghton, secretary, Brattleboro, Vt., asking who is the last recorded owner of the cow and how she could be registered in your name. She may have been transferred several times and the papers lost in the process, as this is a common occurrence with pure bred cattle and you may be making unnecessary work by writing to alleged previous owners. The original owner was apparently P. J. Van Loben Sels, Vorden, Cal. In writing to the association an outline of the cow, showing markings, may help prove identity and expedite matters.

POULTRY INSTRUCTION—I would like to ask you in which way I could get advice or information from the University Farm on how to take care of and feed chickens in the most profitable way.—P. B., Petaluma.

The University of California has just what you want in a correspondence course in poultry keeping. It is conducted by Professor J. E. Dougherty of the University Farm School at Davis, and can be highly commended. The only cost is postage. You can write to him or to the University of California, Berkeley, for application and details. Professor Dougherty is also the author of a bulletin on poultry culture which contains a great amount of valuable information. There is also an extremely valuable bulletin by Professor M. E. Jaffa on Feeds and Feeding, both of which can be obtained on application to the University of California.

APRICOT CROP AND PRICES—Will you kindly inform me what the outlook is of the apricot crops in different sections of the State, whether large or small? My reason for asking is that I had an offer of 8½ cents and don't know whether to sell or not. My cots, which are of the Blenheim variety, bloomed heavily and set well, but have since dropped off, so that I think there will not be half a crop, and that condition exists more around here. If this is so all over the State I think I am justified in holding, for then the crop will be short, but if on the other hand that condition only is local, what few cots are raised in this locality would not amount to much and I would sell.—A. N., Fresno.

Our crop reports from various counties of California are prepared very largely with the purpose of helping people in your position. As you will see from there, the apricot crop in general is in pretty good condition in the leading apricot sections of California with the possible exceptions of Yolo and Solano counties, where shipping will probably attend to most of the apricots this year. You will realize that a very important thing in the interpretation of these reports is to give the different sections of the State credit in proportion to their importance in fruit production. A shortage of peaches in the bay counties, for example, would not greatly affect the prices, while a peach shortage in Fresno county would be very important. Similarly the size of the apricot crop cuts very little figure in Fresno county as compared with Santa Clara and Alameda counties and the southern coast counties. Of course, the season is not on its feet yet in spite of the fact that Chico had ripe cherries the first week in April, but indications are probably fairly reliable. You will have to be your own judge of prices, but it is worth while remembering that the demand for dried apricots has been excellent of recent years and consumption is increasing and that the market is well cleaned up and in excellent shape at this time. As a general thing it is also well to remember that the farmer who sells when he gets a fair offer is likely to get better prices than the one who tries to hang on for the last cent. Too many farmers try to do that.

CROSSING OF MELONS AND PUMPKINS—What is a safe distance to plant pumpkins from watermelons or muskmelons to avoid the crossing effect? I was told just so they don't run together. Is this a safe plan?—A. R., Ripon.

Different members of the family to which belong melons, squashes and cucumbers are likely to crosspollenize if given the opportunity. They might do so at 200 feet and might not at two feet. It all depends upon whether wind or insects carried the pollen from the flower of one to the flower of another. As far as bees are concerned, they usually visit on a single trip only flowers of one kind, and so do less crosspollenizing than they would if they went from one flower to another at random. Thus if watermelons and pumpkins are planted close together, there is more chance of watermelons pollenizing melons and pumpkins pollenizing melons than otherwise, but if the wrong pollen gets to a flower first, it will give crossbred seed. You should remember, however, that crosspollenization does not affect the quality of the fruit developed from the flower receiving the wrong kind of pollen, it only affects the next generation. Therefore you need not worry about where you plant the melons and pumpkins, unless you raise your own seed. Plant for the highest production or any way you want and buy the seed for the next season's planting. Or, if you do raise your own seed, have the vines by themselves. Would say that 25 to 50 feet was far enough apart for all practical purposes, unless strong winds would carry pollen from one vine to another. On account of resemblance in flower and vine of cucumber and cantaloupe there is more danger of crosspollenization there than with other members of the family.

SOLUTION FOR TREE KILLING—Do you know of a formula that will destroy the life of a tree?—G. J. C., Petaluma.

We suppose that you desire a formula for solution to be inserted into the trunk of a tree. A mixture of cyanide of potassium and salt peter (half and half) inserted in a hole bored close to the bark of tree and plugged up tightly is said to often be effective. A solution of corrosive sublimate would also likely be very effective, or white arsenic dissolved in hot water, an ounce to a quart. You could put hose on bottle and other end in hole in tree, plugging hole to prevent leakage and inverting bottle to force liquid into wood. Dry matter put into a hole is not likely to be effective, as moisture is needed to carry poison into circulation. Girdling a tree will often kill it. Trees cut down after heavy growth of spring is well started will often die when they would send up shoots if cut down at other times.

Who has had any experience making bread out of alfalfa meal, or what mill makes alfalfa meal especially for human consumption? A correspondent asks for this information in the following letter:

Will you please favor me with the address of the mill or grocer making or selling alfalfa meal of a good quality for human food? I tested some as a bread, and as I try everything personally first, found it rather fattening and gently laxative, which I should expect, but it rose and fell in the oven, which I expect was due to age and immoderate dust. So this time I'll try a leafy growth and a pretty fresh meal, and would prefer the mill address, especially if the owner is inclined to physical culture or a reasonable food.

Replies can be sent to Orchard and Farm and will be forwarded to inquirer.

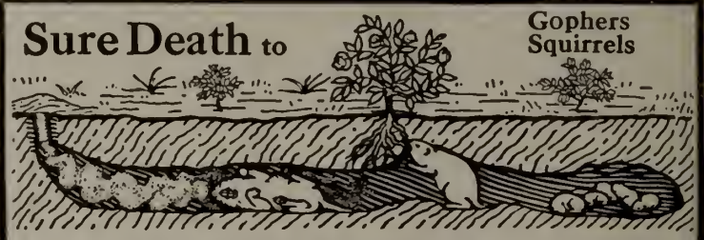
KOKOMO STEEL WIRE FENCE

Either square of diamond mesh, FOR POULTRY, HOG OR STOCK USE. Many styles to select from. Satisfaction guaranteed. Send for Catalogue with net factory prices.

California Anchor Fence Co.

Market and Aurora Streets - - - - - Stockton, Cal.

Sure Death to Gophers Squirrels



NEWTON'S GOPHER AND SQUIRREL KILLER No. 6

Exterminates Gophers, Squirrels, or any vermin in holes or caves where the poisonous gases can be confined.

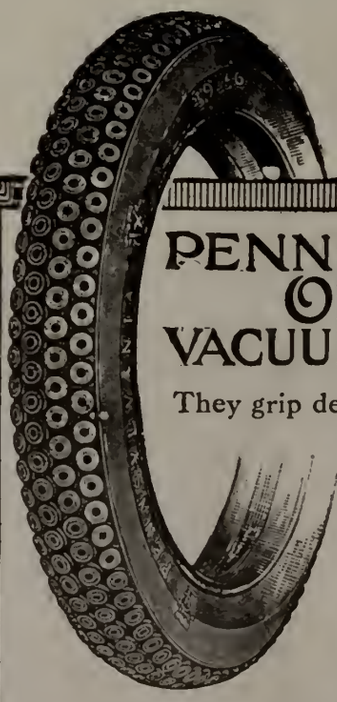
GETS THEM EVERY TIME—It produces 4,000 cubic feet of carbon-bisulphide gas, which is sure death to any animal forced to breathe it. It burns without disturbing the ground, and the poisonous gas penetrates to every part of the burrow. It can also be used for fumigating.

ABSOLUTELY SAFE TO HANDLE—Anyone can hold the cartridge without the slightest danger of being injured. It is the most inexpensive, the most effective, the surest, safest and easiest.

$5 per gross. Sent by Express Collect.

NEWTON'S CALIFORNIA FIREWORKS CO.

249 Front Street, San Francisco, Cal.



This tread of heavy Vacuum Cups means service and safety

PENNSYLVANIA Oilproof VACUUM CUP TIRES

They grip deeper and hold better in soft roads than any other design of tread.

They often wear several thousand miles before the extra heavy tire beneath is reached.

When you are in town, you are guaranteed against skidding should the pavements be wet and slippery.

Vacuum Cup Tires are the best equipment for country service. They are the heaviest tires per rated sizes made and the strongest. They are absolutely proof against the destructive effects of oil.

Guaranteed for 4,500 actual miles. Records covering many years show a far greater average service.

Dependable dealers everywhere or write for nearest address

PENNSYLVANIA RUBBER CO.

JEANNETTE, PENNSYLVANIA

Pittsburgh Detroit St. Paul Minneapolis Cleveland Chicago Omaha Seattle Kansas City Dallas Boston New York Atlanta San Francisco

NON SKID

An Independent Company with an Independent selling policy

A Page of Stock Questions

I WOULD like to know the names of all the known breeds of draft horses, of saddle horses, of coach horses and other breeds, if any; also all the known breeds of ponies.—F. C., Half Moon Bay.

The list you ask for is practically impossible to provide, for one would not know just where to leave off in any classification. For example, the Arab is of varying degrees of purity in breeding and a large percentage of horses from Northern Africa to India might be termed of the Arabian breed. In them could be made separate breeds according to size, section of country and more or less variation in type from horses derived from about the same stock elsewhere. You will realize that all breeds not developed intentionally by crossing are simply the general type of animal used in the country for some kind of work, and in many parts of the world there are horses of somewhat different type from horses elsewhere which can hardly be named as a definite breed. When it comes to coach and saddle horses and others of similar size there are often no distinct lines between types, owing to crossing.

For practical purposes in America there may be said to be the following breeds of drafters; the Percheron, coming from La Perche in France; the Shire, coming from England; the Belgian, coming from Belgium; and the Clyde, or Clydesdale, coming from Scotland. The Shire and Clyde are closely related and of similar type. The Belgian is the largest breed, the Percheron the most common in America. Closely related to the Percheron are other French breeds, as the Boulonnais, Breton, Ardennais and others, being with the Percheron often termed French Draft and Norman. There is also another British draft horse, the Suffock Punch, that is fairly well represented in America.

There are of the smaller breeds the Thoroughbred, Hackney, Cleaveland Bay and Standardbred horses of British and American origin, often closely related or derived one from the other and containing considerable Arab blood, also various strains or developments from these. There is what is called German Coach and French Coach horses, derived from medium-sized horses in these two countries.

There are ponies of one sort or another in almost every country, the small size often resulting from hard fare and bad breeding. For high class ponies there can be named the Shetland and Welsh breeds; although there are many others of British origin of fine quality but minor importance. Austria-Hungary is a country of fine medium type horses. They also have an excellent breed of ponies of which there is a fine herd at the Hopland Stock Farm in Mendocino county.

There is a wild breed of horse in Siberia that is considered distinct from all domesticated horses and so can be named here. This is called Prievalsky's horse, from the discoverer. It is only a pony in size and is practically untamable. Several are in captivity.

Possibly others would include other breeds in this list, or leave some out, but as there is no distinct line in breeding, type or origin in horses in different countries and in the same country, even after systematic breeding has been conducted, and as it would be useless to name minor breeds of no importance here, every list has to be more or less incomplete.

FINANCE, HOGS AND FROGS—I have bought five acres near Stockton, price $1,000; paid $100 down; haven't enough money to start now; will the Reserve Bank lend money for stock on a proposition like this? Is the Chester White a good market hog? Is there a good frog market here? Some one told me all the large hotels have their own frog ponds.—T. E. S., Oakland.

The new banking system is not in operation yet and it is not likely that borrowers of small amounts of money will be able to get much advantage when it is, except by organizing on their own account according to the lines suggested by the United States Commission on Rural Credits, told of in the March issue of Orchard and Farm. No bank would lend money on such narrow security as you have to offer either. The Chester White is an excellent breed of hog. It is a lard hog, like Poland China, and grows to a very large size. If a person has facilities for raising frogs to advantage he can find a good market for them, but profits will depend upon natural equipment for production as well as skill. The hotels buy their frogs instead of raising them as a usual thing.

ALDERNEY CATTLE — Will you kindly tell me if the Alderney breed of cattle is the Jersey, or are they a distinct breed? If so, are they a dairy breed or beef breed, or a dual purpose breed? — SUBSCRIBER, San Mateo County.

The term "Alderney" is seldom used now, as the cattle once so-called are included in the Guernsey breed, a strictly dairy breed of cattle. There are the three leading islands in the English Channel that have always been noted for the high quality of the cattle: Jersey, Guernsey and Alderney. The Jersey cattle are clearly distinct from the cattle on the other two islands, but the cattle of Guernsey and Alderney are so much alike that it has been found best to consider them one breed, with Guernsey, the larger island, providing the name. A number of years ago, however, cattle from the smaller island were called Alderneys, and the name persists somewhat yet. The breed is slightly larger than the Jersey, giving more milk, which averages a little less rich, though it still is very high testing. The Guernsey is one of our popular breeds in America and a description of it can be found in our February issue by W. H. Caldwell, secretary of the American Guernsey Cattle Club. There are several fine herds in California.

LINE BREEDING FOR CATTLE—Is line breeding of cattle generally considered wise?—T. S., Woodside.

Answer by Prof. Gordon H. True, University Farm, Davis:

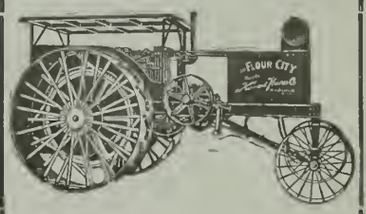
There is less objection among breeders to line breeding at the present time than formerly. Conclusive evidence as to the desirability or non-desirability of this method of breeding is sadly wanting and my advice relative to such practice would always be based upon a rather definite knowledge of the animals involved. It is true that some of the best results in the breeding of pure bred livestock have been attained through close breeding, also some of the most disastrous. Line breeding should, therefore, be practiced by only the most intelligent breeders, and indulged in only where the animals in question are of high quality and extreme vigor.

When to Cut Oat Hay

The best time to cut oat hay is generally considered when it is in the soft dough stage, or between the milk and the dough. In this stage the head will contain as much nutriment as possible, while yet leaving the straw in good condition and nutritious. If hay is cut too early the straw will not be as sweet as it should be. If the lower couple of joints sweeten up it is safe to expect that the whole stem is satisfactory for hay.

The social farm neighborhood is the neighborhood that keeps the boys and girls on the farms.

ON ACCOUNT
Of Our
Discontinuing the Sale
OF
Traction Engines
WE OFFER
AT COST
20 H. P. and 40 H. P.
"Flour City"
Gas Tractors



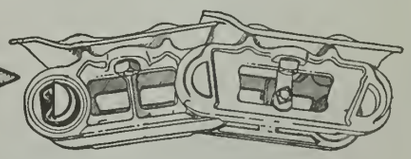
Full supply of these Engine Parts always carried in stock. Write for Catalogue and prices.

We are also agents for John Deere Engine Gang Plows.

HAWLEY, KING & CO.
LOS ANGELES, CAL.

Kills Prairie Dogs and Gophers of all kinds. Endorsed by State Experimental Stations. 1400 tablets prepaid for $1.25. Warranted. Raticide Tablets, 25c. Ask druggist or send direct. Booklet Free. F. D. Chemical Co., Ft. Dodge, Ia.

No Other Tractor Has This



The illustration to the right shows the famous C. L. B. Frictionless Rocker Joint. It is the invention of C. L. Best, one of the foremost tractor experts in the country. This **C. L. B. Frictionless Rocker Joint** is found only in the **C. L. B. Track Laying Tractor.** It does way with the excessive cost of upkeep and maintenance which the tremendous friction in the working parts of other tractors causes. The

C. L. B. All Steel
70 H. P. Track Laying Tractor

Is the only machine of its kind on the market that has this frictionless rocker joint, and it is also the only tractor on the market that will give the maximum of results at the minimum of cost.

A Statement by C. L. Best

"I fully realize that when I claim my tractor to be the superior of any on the market that I am making a pretty broad statement. I am also aware of the fact that the use of superlatives leads to nowhere, unless you can **prove** what you say. **And prove what I say I can.** I know what other tractors can do. I've been dreaming, thinking and making tractors all my life. It is the one business that **I know I know.** My tractor is also the only all steel machine of its kind on the market. It is the only tractor that is built right **throughout.** When I sell my tractor I give a broad and binding guarantee with it. I claim that it will work under any and all conditions and give the kind of service that will uphold the reputation of this firm and make possible my giving such a broad guarantee. If you, who are reading this advertisement, are in the market for a tractor, let me demonstrate and prove what my machine can do." C. L. BEST.

Illustrated and Descriptive Literature on the C. L. B. Track Laying Tractor Will Be Cheerfully Sent to Any Address.

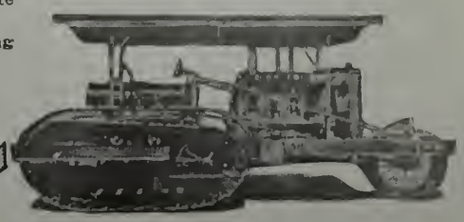
C. L. Best Gas Traction Company
105th Avenue : : : : Oakland, Cal.

The **C. L. B. 70 H. P. Track Layer** will plow, harrow, seed, harvest and ditch two-thirds cheaper than it is possible to do with mules or any animal power, and it will make continuous turns, loaded, as short as any track engine on the market.

Both tracks on a C. L. B. 70 H. P. Track Layer are pulling the same, whether going straight ahead or making a turn. No other tractor of this type does this.

The C. L. B. 70 H. P. Track Layer eliminates the twists and strains common to the type which only pulls with one track on the turn.

The 8-inch face internal gear drive on a C. L. B. Track Layer, with its 8-inch face driving pinion, does the same work as second motion chain drives. Hence the C. L. B. 70 H. P. Track Layer has only **two moving** parts in its internal gear, against approximately 40 moving parts in other track laying machines.



California Crop Conditions

—By the County Horticultural Commissioners—

ALAMEDA, Fred Seulberger—In Alameda county at this date (April 20) apricots promise 50 per cent of a full crop; cherries 75 per cent; pears 75 per cent; peaches 80 per cent; prunes 40 per cent, and wine grapes 50 per cent.

COLUSA, R. R. Boedefeld—Prunes prospects have been reduced about a third from drop due to hot weather during blooming season, as far as I can figure it out. At the present time other fruits promise as follows: Apricots 100 per cent; pears 75 per cent; peaches 50 per cent, as blight has been bad; plums 100 per cent; grapes 100 per cent; berries 100 per cent; citrus fruits 100 per cent; vegetables 100 per cent; grain 75 per cent, and livestock 100 per cent.

FRESNO, Fred P. Roullard—A good crop of everything is indicated except peaches and apricots, which are about 75 per cent average. I believe this is due to climatic effects—the results of a two years' drouth. Muscat, Malaga and wine grapes should make full average crops, as should citrus fruits, berries, vegetables and grain of all kinds.

KERN, Kent S. Knowlton—All deciduous fruits have blossomed full and have set for a full crop. The first shipment of apricots will be made before another month. Citrus fruits have set well. Conditions with grapes still remain favorable for a good setting. Berries are producing very well. Vegetables were bothered some with aphis, but not enough to prevent full crop. Early wheat was slightly rusted, but is making a bumper crop. Cattle and sheep are short, but have exceptionally good feed and all stock is in first class condition.

The Shafter Colony, 17 miles northwest of Bakersfield on the Santa Fe, the newest colony in Kern county, is making heavy planting of olives. From 40,000 to 50,000 orange trees are being planted in Edison and Jasmine district.

MONTEREY, J. B. Hickman—The following are the prospects of various deciduous fruits in this county: Apricots 125 per cent; peaches 60 per cent; plums and prunes 25 per cent; pears 70 per cent. Apples are not setting well and in some locations are dropping very heavily. Berries and vegetables will make full crops. There are very good prospects for grain of all kinds and hay. Livestock is thriving and prices rule high. Apricot thinning is about over; there is very little rot. Apple spraying is well under way. Earlier spraying could not be done because of softness of land in orchards, due to rain.

ORANGE, Roy K. Bishop—Apricots will make an 80 per cent crop, peaches 25 per cent; apples 80 per cent; pears 90 per cent. Early blossoming apricots set heavily, but later blossoming came at the time of hot winds and failed to set much. Peaches were in blossom at the time of hot winds and failed to set more than a little fruit. Prospects for walnuts are very poor, although it is too early to make a good estimate. Berries of all kinds are blossoming heavily and there are plenty of strawberries in the market. Vegetables generally are good. Cabbage is in good condition, but most of it has been shipped. Early grain is in good condition and is maturing rapidly, but late grain and grain hay is in much need of rain.

Navel oranges have practically all been shipped. The navels have bloomed heavily and have set a good crop for the present. Valencias have bloomed well except some orchards of young trees. Lemons are in fine condition with prospects very bright for good setting.

Sugar beets have shown at least 100 per cent in condition up to present time. Cut worms have been quite plentiful, also some army worms. On April 18 there was a strong, dry, hot northeast wind; on April 19 no wind, but very warm, which is a decided injury to late hay and grains. What effect it will have on fruit cannot be told at present.

RIVERSIDE, D. D. Sharp—Prospects are good for a full crop of deciduous fruits. The shothole fungus is showing quite severely in some orchards and will necessitate lowering the bumper crop of apricots, as reported, to normal. It is too early for any estimate on citrus fruits. Grain is in fair condition. There is a brisk demand for livestock, which is scarce.

SAN BERNARDINO, S. A. Pease—Deciduous fruits promise as follows: Apples 100 per cent of normal crop; apricots 90 per cent; cherries 100 per cent; grapes 100 per cent; peaches 95 per cent; pears 100 per cent. Oranges indicate 98 per cent of a full crop and lemons likewise. Alfalfa looks well. Crops generally promise an average of 100 per cent, with the exception of two localities which were cut down a little by a bad wind.

SANTA BARBARA, C. W. Beers—There was a full blooming of deciduous fruits with an abundance of moisture in the soil to insure a full crop. Orchards are in good condition of tilth. The cherry industry is being rapidly extended by new plantings. The apricot industry is receiving more attention, with prospects of a greatly increased acreage during the immediate future. All citrus trees are in splendid crop conditions, with a minimum of scale pest troubles, all of which are in control at this writing. The acreage is being extensively enlarged and the available territory will permit of several thousand acres of more planting.

Probably between five hundred and a thousand acres additional will be planted to lima beans the coming season, as new territory has proven adapted to this crop and the growers are taking advantage of last season's experiments to plant a much larger area to this paying crop. Grain aphis has been a pest on barley and oats, and an extended use is now being made with the Hippodamia (ladybird) in an effort to check the work of this pest. Probably 600 acres of new raw land will be put under the plow within the county, most of this being put into grain for the first year.

SHASTA, George A. Lamiman—The prune situation is a problem at present. Prospects are that there will be a light crop. Peaches are better generally and in the Happy Valley district there will be a good crop. Pears are heavily loaded, as are apples. Grapes look well and are full of bloom. Berries are in good condition and strawberries are ripening rapidly as the warm weather advances. Hay and grain need the warm sunshine and are coming out in good condition. The late rains will help out the late sown grain and with future showers will make a good crop. Livestock are in good condition, as there has been an abundance of feed, which has put on a luxuriant growth because of the showers of the past week.

STANISLAUS, A. L. Rutherford—Peaches are dropping and the crop will be less than normal. Apricots will make a normal crop; apples a full crop; pears a full crop; plums are dropping; walnuts are short; almonds are heavy; grapes are looking well. Citrus fruits are blooming full. Vegetables are growing well, but have been badly attacked with aphis and wire worms. Grain is in extra fine conditions throughout the county. Livestock is fat with plenty of feed in foothills and valley.

Make Your Orchard Pay

Save the moisture. It means more and better fruit. Keep the ground cultivated without packing it down as fast as you stir it up. The only power that will do this *right* is the Baby Caterpillar. It does not pack the soil nor spoil the mulch around the trees. The long, wide Caterpillar tracks distribute the weight over more than 1,300 square inches. That makes about 7 pounds' pressure to the square inch—less than that of a horse or a man of 170 pounds' weight.

CATERPILLAR

Reg. U.S. Pat. Off.

The Caterpillar handles easily, turns short from one row into the next and works close up to fences and corners. Without the canopy it is only 58 inches high—you can cultivate right up under the trees without injuring the branches.

The Baby Caterpillar is *guaranteed* to do the work of 14 average horses. It has plenty of power for plowing and for hauling fruit and other produce to market. The Caterpillar tracks let no energy go to waste in slipping. They deliver more horsepower from the motor to the draw-bar than round-wheel tractors possibly can, especially in soft or wet ground.

By means of the stationary power attachment, you can use the Baby Caterpillar for threshing, sawing, pumping, grinding feed or for any belt work. The Caterpillar is a practical, all-round tractor that can be adapted to dozens of uses on your ranch. Economical of fuel, easy to operate, cheap to maintain. You ought to know about the Baby Caterpillar because of the dollars and cents it will save you if you are still working with horses.

Ask our nearest branch for catalog F. 53, which will give you full information.

Everything for the power farmer—harvesters, disc and moldboard plows, harrows, scrapers, supplies and lubricants.

THE HOLT MANUFACTURING COMPANY, INC.

Stockton, Cal.
San Francisco, Cal.
Los Angeles, Cal.
Spokane, Wash.
Portland, Ore.
Peoria, Ill.
New York, N. Y.

Do Better Disking and Raise Bigger Crops

—You'll Make More Money

Regardless of how fertile or how poor the land, you can make more money by doing better disking. You can grow bigger crops at proportionately less cost.

Cutaway (CLARK)

disk harrows will make you more money—they are specially designed for intensive tillage. Many farmers not only grow *bi ger* crops at *proportionately* less cost by using CUTAWAY (CLARK) disk harrows, but they raise more per acre at less cost per acre. There is one for the biggest tractor or the smallest horse. Ask your dealer to show you a CUTAWAY (CLARK) disk harrow. If he doesn't sell the CUTAWAY (CLARK), write us. Don't accept a substitute. We ship direct where we have no agent. Write today for free catalog, *"The Soil and Intensive Tillage."*

Made in 5 sizes, each in regular and extension heads. Disks 16, 18 and 20-inch

Made in sizes small enough for one horse and large enough for the biggest tractor

THE CUTAWAY HARROW COMPANY
Maker of the original CLARK disk harrows and plows
996 MAIN ST., HIGGANUM, CONN.

California Crop Conditions

—By the County Horticultural Commissioners—

BUTTE, Earle Mills—Prunes will make only 25 per cent of a crop; peaches, 100 per cent; almonds, 60 per cent; pears, 55 per cent; cherries, 90 per cent; apples, 80 per cent. Citrus fruits are not out of blossom yet, but conditions look favorable for a good crop. Olive trees are blossoming very heavily.

IMPERIAL, F. W. Waite—Apricots will make only 50 per cent of a normal crop, due to a hot spell during the blooming. Grapes will make a normal crop. Barley will make only 70 per cent of a full yield on account of the aphis. Livestock conditions are good.

KINGS, B. V. Sharp—Present prospects for crops of all kinds of deciduous fruits are 25 per cent above normal. Grapes are promising well. Grain and field crops are in excellent condition on account of having plenty moisture. Livestock is in fine condition, as feed is abundant.

NAPA, A. D. Butler—As a rule, the yield of deciduous fruits will be light, prunes being about 50 per cent; almonds, 50 per cent; apricots, 25 per cent; cherries, 75 per cent; pears, 75 per cent of normal. Grapes were badly frosted, but are coming out well. Peaches are very light. Grain is very fine and there is lots of feed for livestock.

NEVADA, D. F. Norton—Peaches promise a 125 per cent crop in this county; plums, 100 per cent; almonds, 100 per cent; apricots, 100 per cent; cherries, 125 per cent; apples, 110 per cent. Bartletts will make 90 per cent of an average crop. The crop of all Beurre and winter pears is enormous, fully 130 per cent. In an estimate two weeks ago I figured Bartletts at 75 per cent of a normal crop, but the late bloom nearly all set, bringing up the percentage 15 per cent. Walnuts promise the largest crop ever secured in the county. Citrus fruits are making a very heavy bloom and the fruit is setting nicely. It is too early to estimate the yield of grapes. Vegetables are just being planted. Grain is in splendid condition. Livestock is all in good condition, and the feed is one month earlier than usual.

SAN DIEGO, H. A. Weinland—The prospects for all deciduous crops are that there will be all the trees can carry. The hay cutting is progressing rapidly, with a good average yield. The farm bureau in the county, with a membership of 433, is considering the matter of co-operative marketing.

SAN BENITO, Leonard H. Day—Apricots promise 90 per cent of a full crop and prunes half a crop. Hay and grain will give heavy yields. Livestock is in fine condition.

SOLANO, C. R. McBride—There will be half of a normal crop of deciduous fruits this year, divided in the following way: Cherries 30 per cent; pears, 80 per cent; peaches 80 per cent; apricots 10 per cent; plums 80 per cent; prunes 30 per cent. Tokays will make a normal crop and wine grapes 70 per cent of a crop. Grain will make normal yield.

TEHAMA, Charles B. Weeks—There is a heavy drop of prunes which is not yet completed and this fruit will make not over 50 per cent of a full crop; peaches 75 per cent; pears 75 per cent; apricots 50 per cent. All varieties of grapes look well at present and promise a good crop. Grain looks well and with showers will yield heavily. The drop in prunes is not altogether the result of dry seasons preceding this one, but is due in part to the very hot spell during March, followed by cold, wet weather.

TULARE, Charles F. Collins—Peaches promise a bumper crop. Prunes dropped badly and will be light. Cots are fairly good. Figs promise well. Citrus orchards are looking fine and blossoming full. Grapes of all kinds look thrifty, but it is too early to estimate the crop. Berries are doing very well. Vegetables never looked better, though there is some trouble with aphis. Sugar beets have made a full stand and are looking fine. Grain generally is good. There is plenty of green feed and stock is looking well. Alfalfa is making a heavy crop and is cheap. Some grain hay is being cut.

VENTURA, R. S. Vail—Apricots are at least 100 per cent of normal and the crop is probably two weeks earlier than normal; there is also promise of a long harvest season. Walnuts make a present prospect for 90 per cent of a crop, but it is a little too early for a definite estimate. The setting of oranges for next year is very good. The lemon prospects are above normal. The prospects are for a 95 per cent beet crop; there is a less than normal acreage with prospects for heavier yield. Bean planting has just commenced and conditions are fine for a large crop.

YOLO, G. H. Hecke—Yolo county at this date promises to give: Apricots 40 per cent of a full crop; prunes 40 per cent; peaches 75 per cent; almonds 70 per cent; grapes 70 per cent. Prospects for grain are good.

YUBA, G. W. Harney—Muir peaches will make 70 per cent of a normal crop and other peach varieties 50 per cent; pears 70 per cent; prunes 40 per cent. Prospects are for a normal crop of Thompsons Seedless grapes. Citrus trees are blooming heavily. Berries and vegetables appear normal. There is a fairly large acreage to grain of various kinds and the growth is fine. On account of the abundance of feed and pasture there will be an increase of 20 per cent in the amount of livestock this year. The county horticultural commissioner is planting a 20-acre tract on the State Highway south of Marysville, where his new suburban home will be built, to Seedless grape fruit, Washington navel oranges and seedless blackberries.

Turn Oil Into Crops

Kerosene, the cheapest and best fuel in the world to-day, is what goes into the

RUMELY OIL PULL TRACTOR LA PORTE IND

The OilPull burns kerosene and even cheaper distillate at all loads—at any kind of work. It is the only tractor that can use the Secor-Higgins Oil-Fuel System. There's only one OilPull—Rumely, LaPorte.

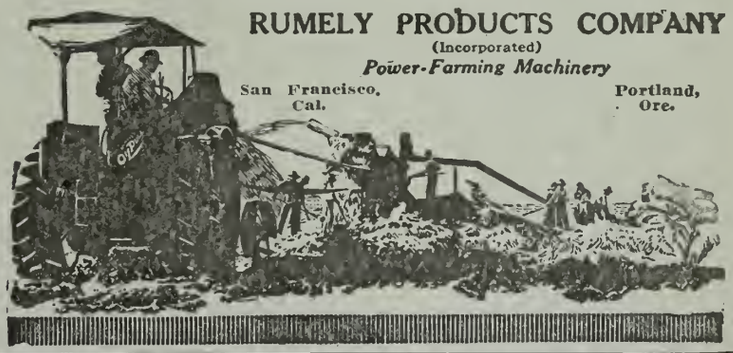
The OilPull in either 15-30 25-45 or 30-60 sizes will show real profits in bigger yields, work done when you want it, horses and labor cost saved. Close regulation adapts it to every variety of field work—breaking, drilling, fallowing, hauling, and harvesting.

Plenty of belt power for running the largest separators. A Rumely Ideal, an Advance or the Gaar-Scott separator and an OilPull tractor will give you an ideal threshing outfit.

Every Rumely machine backed by Rumely service—11,000 dealers and 49 branches—supplies or repairs at short notice. Ask for OilPull and separator catalogs.

RUMELY LINES

Kerosene Tractors	Threshing Machines	Cream Separators	Road Machines
Gasoline Tractors	Corn Machines	Feed Mills	Grain Elevators
Engine Plows	Baling Presses	Stationary Engines	Steam Engines



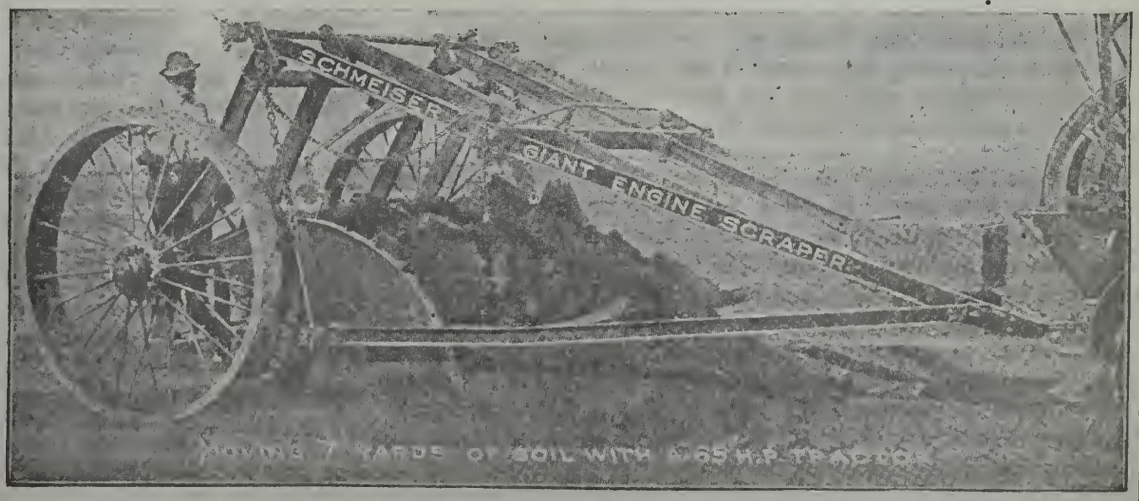
RUMELY PRODUCTS COMPANY
(Incorporated)
Power-Farming Machinery
San Francisco, Cal. Portland, Ore.

Redeem Land by Deep-Drilled Wells!

You can make more money drilling wells for irrigating land with an Armstrong Well-Drilling Outfit than you can in any other business with the same investment. $50 to $75 profits a day made on an Armstrong Outfit. A few hundred dollars invested in an Armstrong outfit will redeem several thousand acres in a single season. Drill any formation, any depth, any place. Gasoline or Steam, Walking Beam, Spudding or Combination Outfits. Write for Free Illustrated Book. If you need a gasoline engine ask for our big engine catalog.

Armstrong Mfg. Co., 403 E. 3d st., Los Angeles, Cal. Home Office and Factory, Waterloo, Iowa.

The Earth Moved for 5c a Yard



Do not forget the SCHMEISER MANUFACTURING COMPANY of Davis, California, will demonstrate their GIANT ENGINE SCRAPER at the Great Tractor Demonstration to be held on the 7th, 8th and 9th of May near Sacramento.

This huge SCRAPER does the work of 15 to 20 Fresno Scraper Teams, tearing down or building levees and railroad grades, building roads, leveling land for alfalfa, rice or orchards. Don't fail to see this machine and some other labor-saving machinery made by the

SCHMEISER MANUFACTURING COMPANY
DAVIS, CALIFORNIA

ORCHARD and FARM

ESTABLISHED 1888

IRRIGATION

VOL. 26 MAY, 1914 NO. 5

Published Monthly at Hearst Building, San Francisco, Cal., by the Country Life Publishing Company.

SUBSCRIPTION RATES

One year, domestic postage paid ---------- $1.00
One year, Canadian postage paid ---------- $1.50

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

ASK yourself just what excuse an agricultural paper has for living, what an agricultural paper ought to be, and then see how near Orchard and Farm is coming to the mark. An agricultural paper should of course tell of good farming methods, like proper pruning, cultivation, feeding of livestock and so on. All agricultural papers try to do this to a greater or lesser extent and most of them stop here. The right kind of a paper in addition should systematically try to point the way to better things. Few papers pay much attention to this, but it is the ruling feature of Orchard and Farm, as this issue and all to follow will clearly show. For example, intensified livestock farming is about the biggest thing confronting California to-day. You will find in this issue intensified sheep raising discussed thoroughly by W. M. Carruthers, for this is the time of year for that subject, just as two months ago intensified draft horse production was the topic. Every month we are to have such an article by Mr. Carruthers, who is a successful stockman of wide practical and scientific experience, who will also discuss the leading breeds of livestock from the standpoint of California farming, just as he does this month with the Chester White hog. You get a clear knowledge of the breeds and of methods of production as well. These two series of articles are a feature of the paper that will make a hit. Mr. Carruthers also gives other valuable livestock information. That silo story by another member of the staff tells of good farming methods, but it points to better things as well and gives details of big value. So does that story about the grain sorghums. Future issues are going to have matter just as valuable and interesting.

With this issue Chas. Weeks of Palo Alto begins regular contributions to the poultry department of this journal. His articles are not ordinary "chicken talk," but like the rest of the paper, broadly constructive and singularly helpful. Read it and see.

Now ask what a man wants to farm for. Well, a strong, normal man with the right stuff in him likes that sort of life and would rather be a farmer than a clerk any day, but every farmer wants to get all the money that the business deserves. The best kind of patriotism is to see that he gets it and Orchard and Farm helps that proposition along. Co-operation along the wrong lines is a fizzle; along the right line it is one of the greatest things for the farmer to-day. The story of Citrus Co-operation gives the individual's part of the greatest agricultural co-operation venture in the world's history. Our crop reports show every month crop prospects for every fruit and for other crops, regulating the market and letting the farmer know the justice of prices offered him. For help with individual fruits few people have thought that though apricots succeed wonderfully in extremes of California horticultural climates, in most fruit districts they are almost overlooked. That at least suggests an opportunity for production. Did you know that although the American consumer has expensive tastes and the European consumer economical tastes, Europe takes far more dried apricots, our most expensive dried fruit, than does America? And still prices fall when there is a big crop. That is a market suggestion. To get information like this takes work, but only the best goes to our readers, and we expect to have valuable matter on other fruits later. Look all through the paper and you will see that everything is for advanced and more profitable farming, needed to keep up with agricultural history, or a review of fixed farming methods that need to be lived up to. We won't talk about it so much again, but we want our readers to know that this good stuff just doesn't happen, but comes by definite planning. If you don't like those plans just suggest others.

The California Livestock Breeders' Association is going to do things. Three days after the April issue of Orchard and Farm was out the directors met, decided what Orchard and Farm said was all right and agreed to undertake definite constructive work. To do it they will need and deserve the backing of every California stock man. The directors authorized Director D. O. Lively, Chief of the Department of Live Stock of the Exposition, to secure the best secretary that could be obtained and get things going. Lively is one of the best organizers in the country and knows the needs of the live stock industry thoroughly. He was manager of the International Live Stock Show at Chicago, organized the Stock Yards at Fort Worth, Texas, was one of the organizers of the Portland Union Stock Yards which has been the greatest single agency in promoting intensive live stock production in the Northwest, and chief publicity man for same. His work has made the live stock department one of the features of the Panama-Pacific Exposition, and the support of the new programme of the Live Stock Association promised him by officers, members and members-to-be makes some of the best news of the month. And speaking of organized live stock, the organization meeting of draft horse breeders soon to be held at the University Farm is another fine thing.

Advanced farm methods have been again before city dwellers of California through the visit of Nathan Strauss, former Secretary of Commerce and Labor, philanthropist and public citizen, with his crusade for pure milk. By this work Mr. Strauss is helping the city folks in getting them to use more of the greatest food on earth and incidentally in teaching them to get a finer product by paying more for it. By so doing he creates a market for dairymen to supply. The regrettable feature of the thing is that through some of his statements the firm opinion is left in the minds of these city folks, especially those club folks, boards of health and others who like to meddle in public affairs in general and dairying in particular, that the tuberculosis in cattle is one of the most horrible things on earth and the tuberculin test the finest and most satisfactory thing ever developed in aid of scientific dairying. Compulsory tuberculin testing of dairy cows has been ruinous to producer, greatly injurious to the consumer, harmful and only harmful, as all up-to-date veterinary scientists unanimously agree. The dairymen got a good bill through the Legislature two years ago, which did not, however, become a law and which would have largely taken from city dictators of dairy methods their power of doing harm, making dairy regulation mostly a matter of State control. The expressed ideas of Mr. Strauss on tuberculosis will encourage these misguided people in their mistaken opinions and in their attack on wise dairy bills when they come up again. Tuberculin testing has valuable uses, but it should universally be acknowledged that it does not at its best half the good its enthusiastic supporters believe, nor is it half as necessary, and further, methods of testing are very unsatisfactory yet and results uncertain. It's a good thing, true, but there's lots of room for improvement. Look on page 24 and read the bulletin reviewed. Study the subject with investigating and unprejudiced mind. Bovine tuberculosis is a small part of Mr. Strauss' programme. The rest of it is all good.

In order to give every California rancher possible a good time and one of the best opportunities ever offered anywhere to see farm machinery of the newest and best models in operation under farm conditions we again call the attention of our readers to the great tractor demonstration to be held at Sacramento May 7, 8 and 9. The demonstration at Fresno in February was all ready to be a wonderful gathering when rain prevented, but in numbers and variety the Sacramento demonstration will greatly surpass the best that was hoped for Fresno. A great crowd will be there and this is said to encourage those to come who otherwise might stay at home. (For further particulars, see page 3.)

The Value of the Grain Sorghums

"CORN Is King," they say East. Alfalfa rules out here as Queen. Will corn, that is, Indian corn or maize, ascend the throne as consort here in California, or will there be a successful rival for Queen Alfalfa's hand? Quite certain it is that the Queen will not shine forth in all her glory until a Prince Consort of some kind reigns with her. The popular rival is King Corn, but there is a rival in view in the kafirs, or the grain sorghums, and this is a plea in their behalf, a statement of their claim to be the great grain for the intensive farmer to use to accompany alfalfa. Corn is being widely promoted as a highly desirable crop for the farmers of our irrigated lands. The grain sorghums—kafir, Milo and Egyptian corn—are growing without special promotion. Indian corn may surpass them in value, but there are big reasons for believing that for the majority of places in our irrigated districts more is to be said for the kafirs, as they will together be called here, than for Indian corn. First, though, a few words may be said on the need to have corn of some kind with the alfalfa, perhaps Indian corn, perhaps another kind. Alfalfa is a wonderful crop, both for the way that it improves land and for its remarkably high feeding value. Both for feed and for soil, corn goes excellently with it. Through pasturing, foxtail, sun scald or various other causes alfalfa stands deteriorate. They can be plowed up and replanted at once, but the process is unsatisfactory and it is highly desirable to give the land a change, as well as to turn a lot of the surplus fertility left by the alfalfa and not needed by the next stand into other crops. One of the corn varieties is sure to fit in well. The alfalfa can be broken up and barley or oats sowed in the fall, harvested in the spring and corn of some kind planted in early summer, being taken off in time to plant more alfalfa in the fall. The land during the year will have given two bumper crops, one of barley hay, the other of corn and on account of producing those two crops will be in fine condition for replanting to alfalfa. Such a system is highly satisfactory to the dairymen that have adopted it. In fact, it is perhaps better to take two crops of barley and corn from the land before replanting to alfalfa.

It is highly satisfactory from the feed standpoint through the fact that alfalfa, though the greatest single roughage in the world, is overloaded in one way as a feed, and the corn varieties are exactly the thing needed to fit in with it.

Indian vs. Kaffir Corn.

One thing makes the rivalry between Indian and the kafir corns intense, that is, their similarity and the possibility of substituting one for the other. Indian corn is a summer grower, so are the kafirs, both being planted at approximately the same time, when danger of frost is fully past and continual warm weather promotes growth. Both produce grain after normal growth in somewhat similar amount, both can be used as fodder, or for silage if the need is so; both are so similar as feeds that they balance excellently with alfalfa, and both have somewhat similar habits of growth, though of different tastes as far as most satisfactory growing conditions are concerned. Both are grains that can be grown on small acreages, being thus different from barley, which is fundamentally a crop requiring a large acreage for satisfactory harvesting.

Where their rivalry develops is in the certain fundamental differences in which the kafirs have the better of nearly every argument as far as climate is concerned in California, and for that reason their case is especially put forward here. In certain fundamental points Indian corn is not naturally suited to most of California. In those points the kafirs find just what they want.

Corn developed in a climate where there is considerable moisture in the air during summer and it is a typical plant of the humid districts. Kafir developed and is most at home in an arid climate, where the air is extremely hot and extremely dry. The one is out of its element here, except under very favorable conditions, the other is right in its element.

The corn developed in a region of summer rains and is knocked out by a serious shortage in soil moisture. The kafirs just quit growing when things get absolutely dry, and start up merrily as ever when moisture comes again and suck all the moisture the ground receives out of it before stopping growth again. Indian corn developed in a shallow, humid soil; the kafirs in a deep, dry, well aerated soil, such as are typical of California.

Indian corn developed in a region of warm nights. Kafir is a desert plant and deserts have cool nights, on account or rapid radiation of heat in dry atmosphere.

There is one very important feature. Corn will not ear out without plenty moisture in the air when the silk is ready for pollen and in most interior locations it is difficult to irrigate or get that moisture in the air just at the right time. The kafirs set grain in the dryest atmosphere.

Soil moisture is almost the deciding factor in the competition between Indian corn and the kafirs. Indian corn must have lots of water just when it needs it. More than one irrigation is almost essential and plenty cultivation, which is an expense both in money and labor. One good irrigation before planting one of the kafirs will be sufficient and little cultivation will be needed. Even if moisture is scant, there will be a crop to fit what there is. Too little moisture will ruin a corn crop. Thus, if water is going to be short. Indian corn is out of the question, while kafir will have all that it could desire, and a good deal greater tonnage of one of the kafirs is made than corn in proportion to the amount of water used. Ordinarily a person can get a bigger tonnage of one of the kafirs than from corn in California, and with everything favorable for Indian corn there will be little, if any advantage. There only remains a question of its value per ton.

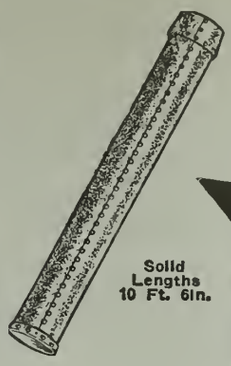
Labor is one of the biggest problems in California and it requires much less labor to grow one of the kafirs than to grow Indian corn.

As Good as Corn.

The kafirs, or grain sorghums, are practically as good as corn both as grain and as fodder, or silage. Corn contains more oil, which gives it a little higher feeding value, but it is safe to figure kafir and milo at nine-tenths as good as corn, or better, especially when alfalfa is fed with it. In the silo they are practically as good and have been used by a few dairymen in California with great success. At the State Dairy Association convention in November, Allen Thompson of Tulare told how he had put Egyptian corn in the silo, because his Indian corn was a failure and put plenty water with it and had fine results. Other dairymen have done the same thing and get equally good results.

At the Kansas Experiment Station careful experiments were made in

(Continued on Page Twenty)



Note The Rivets

Solid Lengths 10 Ft. 6in.

It is a known fact that riveted seams are the best and strongest seams.

"Western"

Surface Irrigation Pipe is riveted instead of lock-seamed and therefore gives the most in strength and wear. It is the strongest and most economical irrigation pipe on the market.

WRITE US—NOW

for full particulars about this pipe. We'll show you how you can save money and get better results by using it.

We make Riveted Water Pipe, Riveted Well Casing, Steel Tanks and Irrigation Supplies

Western Pipe & Steel Co. of California.
444 Market St., San Francisco,
1758 North Broadway Los Angeles,
Branches: Fresno and Taft

Sale of Army and Navy Goods

DIRECT FROM U. S. WAR DEPT.

Blankets from $2.00 to $5.00; Navy Blue Shirts, $1.75; Olive Drab Army Shirts, $2.50; Khaki Army Shirts, $1.00; Army Wool Socks, 25c pair; U. S. Knapsacks, 75c; U. S. Canteens, 40c; U. S. Rifles, $2.50; Mess Kits, 35c; Shelter Tents, $1.25. Other U. S. Army Goods to interest and please everybody.

Send for Free Catalogue. Mail Orders Promptly Filled.

SPIRO HARNESS CO., 307 Market St., San Francisco, Cal.

The Use Of Hercules Dynamite On Farm, Orchard and Ranch

Dynamite is not a Jack-of-all-trades. It will not in all cases take the place of tools you are now using. Sometimes it can only be employed as a supplement to them. But most of the work usually done with a spade or an axe, a pick or a bar, can be done more quickly, more cheaply and more thoroughly with dynamite.

When you have a tree to fell, a ditch to be dug, land to be drained, stumps or boulders to be removed, logs to be split, a well, a cistern, or a cellar to be dug, or more important still, trees to be planted or land that needs sub-soiling, *use Hercules Dynamite.*

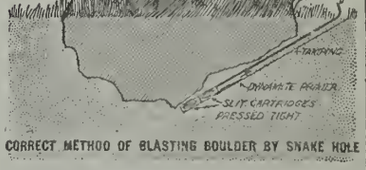
It would be worth your while for you to write for "Progressive Cultivation." It gives complete information on how and when to use dynamite.

HERCULES POWDER COMPANY,
Chronicle Bldg., San Francisco, Cal.
Please send me a free copy of your book,
"Progressive Cultivation."
I am interested in Dynamite for

Rock Blasting

The quickest and cheapest way to clear land of rocks is by using Hercules Dynamite. A few minutes of preliminary work in setting the charge and then the rock is instantly broken into many small pieces that may easily be removed.

There are three methods used in rock blasting—snake hole, block hole, and mud capping. The illustration shows the first. Full details regarding this, and the other two, are given in "Progressive Cultivation."



CORRECT METHOD OF BLASTING BOULDER BY SNAKE HOLE

Ditch Making

No other method can equal the use of Hercules Dynamite for general irrigation and drainage work. By changing the course of a stream acres of useless land are often reclaimed. Two men can usually do such work in a few hours' time—with Hercules Dynamite. Without it a gang of laborers would require several days.

In "Progressive Cultivation" there are interesting details given about work of this kind.

DIAGRAM OF A DITCH TO STRAIGHTEN A STREAM.

Intensified Sheep Farming for California

By W. M. Carruthers

IN California intensified sheep farming is little understood. Sheep are kept in a more or less desultory manner, being allowed the run of some hill pastures or woodland; fed at intervals in winter; sold off when prices become low; bought up again with the return of higher prices; given small care or encouragement; a side issue with the farmer and yet profitable in spite of this neglect.

One of the reasons for this condition of affairs is that it is a heritage of the days when sheep were little valued for their flesh and were kept solely for their wool. It is the result also of the low priced lands in former days and the insufficiency of labor to till them.

Intensive sheep farming is nothing more or less than getting full value from the flock, as considered from the standpoint of the block, "The Court of Last Appeal."

The battle of the breeds was settled years ago, with the result that every breed has its own place to fill in sheepdom, and the name and kind of flock are therefore immaterial. Personal fancy and a careful study of the environment in which the flock is to be maintained are two of the chief factors necessary to make a good start. The chief aim of those who aspire to achieve success at intensified sheep farming is the production of the early milk lamb; the finished six to eight month lamb, dressing sixty pounds, or both.

In Scotland much of the song and story of the neighborhood is twined around the gentle shepherd and his flock. In glowing pictures both the poet and the artist have told the story of simple lives spent in humble homes amid fields fenced by the "hawthorne hoar" or amid glens where babbling brooks make the silence music. One generation succeeds another; these stick to their country, and as far as legend carries us there are families who have worked out the destiny of the border flocks, where have been produced 80 per cent of the sheep breeds in this world.

The consideration of the environment best adapted for the different breeds of sheep in the production of these marketable lambs is very important. Along the river bottoms and in the great valleys of California you should find the Border Leicester, whose best economy is in cross-breeding and whose produce from the Merino ewes are superb feeders with a very good class of wool. Here you should find the Cotswolds, which do best in small flocks, but are also excellent for cross-breeding with the Merino. Very similar to the Cotswolds are the Lincolns, the heaviest breed in the world, and in England Lincolns have been known to dress 90 pounds to the quarter. In truth the great mutton exporting business of the Argentine is based largely upon the use of Lincoln blood on the Merino foundation. It is not a generally known fact that the Argentine sheep are far superior to ours, and are much more acceptable in the British market. When we become exporters of mutton the Lincoln, the Cotswold and the Border Leicester, together with the Dorset (which have the record for dropping early lambs and are known as the best milkers in the sheep tribe), will be found in large numbers in our great valleys and lowlands along the rivers.

On the higher arable lands and in the foothills should be found the Southdown, whose mutton is ranked as the best of any of the Downs breeds, it being well marbled with fat and lean, tender, sweet and juicy. In the same environment we find the Shropshire, the hardiest of all the Downs breeds and famed for its prolificacy. With the Southdown and Shropshire may be found the Hampshire. The late Governor Sparks of Nevada, replying to the writer's inquiry as to the best Downs sheep for the State of Nevada, said: "For a good leg of mutton give me a Hampshire."

Southdowns Raised Under Intensified Farming.

Still higher up on the green hillsides the graceful Cheviot makes his living along with the long-distance Merino. Last and most picturesque of all, on the high mountain tops will be found the shy Blackface. They love the high peaks, the heathery slopes and scenting storm. Their mutton commands a very high price on the British market, and crossed with any of the Downs breeds, their lambs are among the first to reach the market as a finished product.

No matter what kind of flock is secured for the production of the early lamb, it must always be remembered that if the performance of the duty and care of the flock is to be a secondary consideration or a side issue with the farmer, his failure is assured before he starts.

Producing the early lamb is a scientific business where brains and care must work hand in hand. When the rams are turned in with the flock in the month of May they should be keeled on the brisket every second or third day, as usually only 50 per cent of an ordinary flock of ewes will produce a December lamb. By the keeling process the shepherd is enable to select the early lambing ewes and the dry ones can therefore be flung into another band and used for other purposes. When a good flock producing the early lamb is secured, it should be kept intact and handled as a separate band, and the sheep used for the purpose they are wanted for as long as they are able to eat. Even if they begin to get old a good hothouse lamb will justify them for another year's feed. The ewe lambs from the best mothers in this flock should be selected to fill in and keep the flock up to the original number.

The method practiced in Scotland in finished lambs which are not sold as milk lambs could be practiced in our own State with very good results. The lamb that is born in February or March is taught to eat ground oats or oilcake at his mother's side, and when he is weaned is carried forward to maturity at a rapid rate. By early November the tops of the flock will dress 60 pounds, and that is a very popular weight in Great Britain. The cultivation of the soil has decreased considerably in Great Britain for the last twenty years, owing to the scarcity of labor, but in the live stock business, and more especially the handling of sheep, a tremendous advance has been made. They turn their sheep product of the farm at half the age, and at 75 per cent of the weight. In our own country the same conditions now prevail; it is the small, tidy cut that is popular; therefore the farmers producing sheep must cater to the demand. Ask a butcher in New York City, Chicago, or even San Francisco, for a large, heavy leg of mutton and he will reply: "No, we haven't any, we never see them nowadays."

There are many other advantages which the farmer gains in keeping a healthy flock of sheep on the farm. The farmer's sheep should be a wool and mutton sheep, with emphasis upon the mutton. This "dual purpose" sheep, if the name be permissible, is a proved success, and it is already represented in some of the breeds. The best type is the most profitable combination of wool and mutton. The investigations of the Tariff Board indicate that sheep farming for wool alone is unprofitable. In investigating 543 flocks of the fine-wool section of Ohio they found that when there was a net credit to wool, the percentage of receipts from wool was 38, and from other sources 62. If the raising of sheep for wool alone does not pay in this region, it probably would not in any other part of the farming section.

Sheep will increase the fertility of the soil if they are handled properly. To do this they should not be permitted to crop off the grass too closely, which they will do if the pasture is overstocked or if they are kept too long in one field. Sheep manure, with one exception, is the most valuable of all farm manures. It is thinly and evenly scattered over the ground and does not produce a rank growth in spots of the pasture, as do other manures. The manure is also worked into the soil by the sharp hoofs of the sheep, so that it is not washed away but becomes available as plant food. This quality has well earned for sheep the title of "Golden hoof." In England, land which during Queen Elizabeth's reign produced only six bushels of wheat per acre, has been made to yield thirty bushels at the present time by the use of sheep. Better cultural methods may be the cause of a portion of this increase, but without doubt the sheep are responsible for the greater part of it.

Sheep increase the productivity of the land by their destruction of weeds. By eating the weeds they make more room for the cultivated crops and increase the supply of plant food and water available for them by preventing the weeds from using it. No other class of live stock, with the exception of goats, will eat as many weeds as sheep. By converting these waste products into wool and mutton they are a source of profit to the owner.

A Group of Pacific Coast Show Hampshires.

Skim Richer Cream

The Silver Crest Creamery of Sacramento, as well as several other creameries in the Sacramento valley, has sent out a letter to its patrons announcing a sliding scale in payment for cream, depending upon the richness of same. This is a step in the right direction in getting good cream, though it doesn't go very far. A reason for the change is given in the letter that "40 per cent cream keeps twice as long as 20 per cent cream." This is an important thing in our hot summers, for everything should be done to delay souring. Cleanliness is most important and keeping cool is next important, but thick cream helps, too. As the only thing required is to change the cream screw, it is improbable that any dairymen will skim thin cream and none will be penalized more than once or twice.

The new scale of payment is announced as follows: For 35 per cent cream or better, regular price of 2 cents about quotation; 30 to 35 per cent cream, ½ cent less; 25 to 30 per cent cream, 1 cent less; under 25 per cent cream, 2 cents less, or quotation flat.

The next step is to grade according to quality and to pay the man that gives clean-flavored, sweet cream a good premium over the one sending in clean-flavored sour cream, and the latter a premium over the one sending in cream of doubtful flavor, and refusing altogether cream of bad flavor. Each creamery is passing the buck to the others to start this grading, but it will mean better prices for everybody and finer butter when it is done, and help promote better dairying greatly in California.

California Aspects of the Breeds

The Chester White or O. I. C. Hog

'HE writer has often noticed with surprise the scarcity of white gs in this country. It is easy ough to discover this scarcity, but ch more difficult to ascribe a son for the neglect of a breed hogs, this being accounted for chiefly by reason of its being the Cotter's hog. You may travel the length and breadth of Great Britain and you will find nothing but the Chester White on all the small farms. As like begets like, we usually find in him

Chester Whites True to Best Type.

ich is undoubtedly one of the best ncral purpose breeds of the present ne. Just why this condition exists not easily explained.

Every breed has admirers and proters who urge its excellence and aptability. The question of the best eed will always be open for dission, but success in the production swine is not dependent upon havg the best breed, but upon the eeder and the care and food he uses.

Certain breeds of hogs will beme popular with breeders and eders on account of their adaptality to the climate in which they e being produced. California is a ate of many different climates, st of them being well suited to e production of the Chester White g. Mendocino and Humboldt unties, with their long seasons of n, and the entire Pacific Coast reon, with its cool and foggy weath, come nearer the climate where e Chester Whites originated than y other section west of the Rocky ountains. This breed also does cellently in the interior of Calirnia.

The Chester White is one of the eeds which received a setback any, many years ago in Great itain due to the fad which was in gue there. Great size and coarseess in the boars seemed to be the ief aim of the breeders, quality d finish being lost sight of entirely, d they even went so far as to bribe e judges at the different shows to in their end. Supply and demand ally came to the rescue of this eat breed of hogs. The British arket began to demand better vor, more tenderness in the quality the meat, smaller joints, and as tle bone and waste as possible. his change in conditions, brought out by the demands of the meaters of Great Britain, caused a volution in the methods of breedg the Chester White hog.

Four or five of the largest packing uses in America for many years ept statistics of the number and olor of hogs which reached the difrent stockyards for slaughter. At rst only 5 per cent of the hogs aching these markets were Chester Whites; to-day 25 per cent of the utput of the hog industry of the orth American continent are Chester Whites, showing what rapid rides they have made in the last venty years.

The Chester White is probably e kindest and most docile of all plenty of length and good size, rare breeding qualities, great prolificancy and litters usually very uniform, a remarkably quiet and gentle disposition, large coarse ears drooped so as to almost obscure the eyes, silvery white hair, usually wavy or curly, and skin showing little brown spots or freckles. These characteristics will usually be found in the Chester White hog and are given to show beginners what they must look for if they intend to become breeders of this class of hogs.

The methods of farming practised in many parts of California would lend themscelves admirably to the breeding and feeding of Chester Whites, as the cheapest and healthiest food for swine—roots and dairy offals, in the form of potatoes and turnips are to be had in plenty on almost any farm. In spring and summen when roots are not available any quantity of green stuff in the shape of alfalfa, clover, vetch, etc., can be obtained at a comparatively small cost.

The question is often asked if the Chester White will supply the finer qualities of pork, at an equal cost to hogs of similar breeds. The answer is—undoubtedly—if the production of small pork alone is considered, or even for supplying the bacon market, no breed of hogs handled judicially will be more likely to be successful than the Chester White.

At the Chicago International Show during the year of 1912 in competition with the world, a Chester White barrow was made grand champion of the show over all breeds. This surely is evidence enough to show the hog breeder that the Chester White has no superior.

Those starting hog breeding establishments on a commercial basis will make no mistake in using Chester Whites for the foundation. The sows are docile, prolific, free breeders, good mothers, quick feeders when put up to fatten, and are at almost any period of their short existence, fit for the butcher.—W. M. CARRUTHERS.

A few coals from the wood fire of the kitchen put into the houses now and then, where the hogs can grind them up to charcoal, help to keep the hogs healthy.

When pigs should be weaned should be determined as much by how they are eating and growing as upon their age.

STANDARD PORTABLE ORCHARD FLUME

NON-CORROSIVE AND RUST RESISTANT.

ILLUSTRATION ABOVE SHOWS FLUME IN OPERATION.

Built entirely of Genuine Open Hearth Iron—No wood in any part. Made for life long use in orchards, vineyards, gardens, etc., where perfect irrigation is desired but where permanent ditches or flume is not wanted. This Standard Portable Flume is made in 20 ft. sections with our patent Expansion joint. It is made in diameters of 8, 10 and 12 inches. It is equipped with any number of water outlets desired, each of which is controlled by adjustable slides, allowing economy in the use of water. With its rigid light iron standards it can be set up by any boy with a monkey wrench, yet can stand as a permanent flume if necessary. There is economy in its use and in its cost, and like all Standard products it is built for service of the hardest kind.

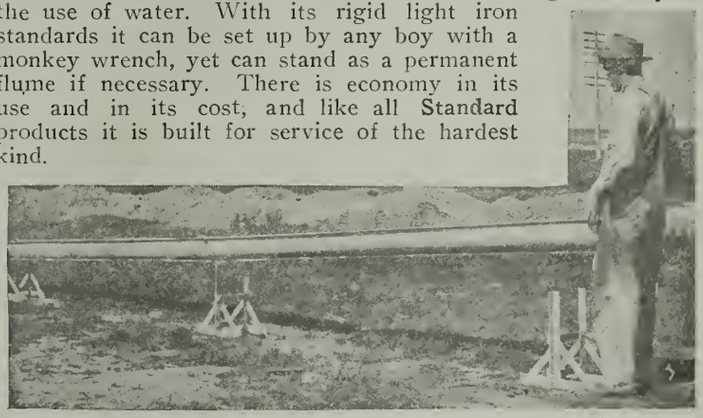
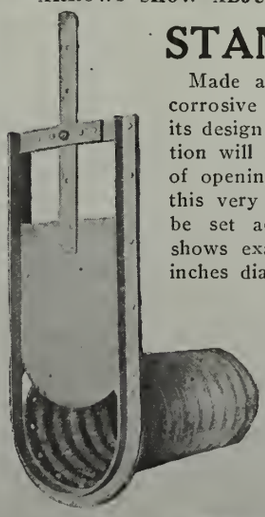


ILLUSTRATION ABOVE SHOWS EASE OF HANDLING.

ARROWS SHOW ADJUSTABLE SLIDES IN WATER OUTLETS.



STANDARD DROP GATE

Made also of Genuine Open Hearth that is non-corrosive and rust-resisting. A gate that is perfect in its design and workmanship. After or before installation will not break, bend or jam out of shape. Size of opening adjustable to quarter of an inch, making this very economical where water is scarce and can be set accurately to prevent flooding. Illustration shows exact type of construction. Made in 8 to 24 inches diameter.

Let us give you costs on what you need, also catalog of larger flume and irrigation gates. The rush season is at hand. Make your estimate early. Write

STANDARD CORRUGATED PIPE COMPANY

516 Rialto Bldg. San Francisco

737 Lawrence Street Los Angeles

California Stock Not Represented

By I. D. Graham

THAT corn is king is an axiomatic statement so generally accepted that it has come to be believed even in sections of the country where corn is not a prominent crop. Just why corn should be considered as king, or who elected him to this exalted position, are questions which do not appeal to the average man. While corn may be king in some sections, it is unfortunate if true.

Live stock is the real king of this country and reigns over every nook and corner in it. Live stock attains its regal position by the suffrage of corn, alfalfa and grasses, as well as by the important place which it occupies in our economy.

Live stock has the largest constituency of any interest in the United States and should have such a constituency in California and the other Coast States, and yet it is not represented in the plans which are now being worked out for the exhibition of California's resources in the Panama-Pacific Exposition.

At the last session of the Legislature a bill was introduced appropriating money for the exhibition of California live stock at the Exposition. This failed of becoming a law, and another law was passed by which the various counties of the State were authorized to raise funds for the purpose of exhibiting their resources. Under this law, each county has raised a respectable sum, but as before stated, not one cent of this fund so created has been used in any county for the exhibition of live stock or for the advancement of the live stock interests.

One of the things that California needs is an increase in population composed of farmers and other producing classes. The impression now exists throughout the East, and perhaps in other countries, that California is a one-crop State and that if an untimely frost should occur the fruit crop of the year is injured or destroyed and California's only resource, in an agricultral way, has been cut off.

Every Californian knows that this is not true, and while he takes great pride in the magnificent production of fruits and nuts of all kinds, which grow from our broad acres, he also knows that this industry only represents one-half of the possibilities and that live stock would more than double the prosperity and revenue of the State.

California produces about $95,000,000 worth of live stock and live stock products, including meat and dairy products and poultry. If there is another industry in the State which produces as much annual revenue, it has not been made known, and yet this great live stock industry is to be placed in the background and entirely omitted from the scheme of things, so far as the powers that be in California are concerned. Surely an industry of such magnitude is entitled to a representation in the great Exposition, which means so much for the present well being and future development of California and the whole Coast region

Better Stock for the Coast

By W. M. Carruthers

THE climate, environment and peculiar conditions connected with live stock work on the Coast predestine the three great States, California, Oregon and Washington, to some day be the nursery or stud farm of the North American Continent. Every year seems to bring the realization of this dream nearer.

Five times an individual or a herd bred and raised on the Pacific Coast has been shipped from two to three throusand miles and entered in the open to the world classes at the great national shows. In every instance these animals have either been given a blue ribbon or made breed champions.

Progress in starting new herds and building up to a higher plane of efficiency the old established herds, has been retarded to a certain extent in the last ten years by some unwarranted conditions. It was only in the beginning of the twentieth century that good farms on the Pacific Coast came to be worth a cash value. The boom which followed this caused many a good farm which had formerly been used exclusively for the production of high grade live stock to be sold at a long price for planting to fruit trees. Such a plan proved to be a very successful enterprise for the fruit industry, but also proved a blow to pure bred stock raising, as the stock raising business not only lost a good breeder, but from the farm's high state of cultivation caused by stock raising, enabled the trees to grow very successfully. These improved farms were found at intervals all over the Pacific Coast and have been used as leaders for the sale of thousands of acres of land, which have been sold far above their real value for any purpose. Later an annual crop, which could be turned into money at the end of the year, was boomed especially in California and alfalfa was the result. Alfalfa and other hays are now being raised largely on the Coast, therefore, more and better live stock, is the "slogan" of today. The period of the stock range is past and the time of intensified farming on the Pacific Coast is at hand, with a brilliant future for the pure bred stockman.

Value of the Grain Sorghums

(Continued from Page Seventeen)

feeding steers and it was found that ton for ton kafir and sweet sorghum silage was practically as good as Indian corn, or better, both from a cost and feeding standpoint. There is no doubt whatever but what the grain sorghums are an entire success as silage, and from labor, moisture and climatic standpoints they usually are far better in California than is Indian corn

There will be room for all the kafirs in California, a person choosing the kind that best suits his special conditions. If grain alone is wanted, especially if moisture is scant, and often otherwise, milo or Egyptian corn may be the choice. If a heavy tonnage of fodder for silage is wanted, and possibly otherwise, kafir may be the favorite. Possibly, feterita may become most popular in some conditions, though as yet it is little tried The whole family is so divided up in its habits that it fits in excellently to needs for either grain or fodder.

California may become a great corn State; more will certainly be grown than is grown now; under some conditions it will always be grown in preference to other grains, and we can probably get strains far superior to those now grown for our soils and climate, but the kafirs have the advantage in some fundamental ways. This is written especially to set forth the advantages of the kafirs, but whichever achieves the final greatest success, it will be a big benefit to livestock quality and to farm prosperity.

SURFACE IRRIGATION PIPE

When land and water were cheap, ditch irrigation was good enough. But now this wasteful method is being rapidly abandoned. Instead, irrigators are using

Madewell

Surface Irrigation Pipe

One piece 10 ft. lengths with 6 in. tapered sleeves. Heavy wide lock seam made by special powerful machinery. Four thicknesses of metal where the strain comes; made doubly sure by soldering. No rivets to be knocked loose. Total collapse of the pipe will not break this indestructible "Madewell" seam. The smooth sleeves and collars with counter-sunk seams make water-tight joints without driving and pounding. This, too, is important.

Send for Free MADEWELL catalogue O.

Robinson Hardware Co. Gilroy, Cal.

MADEWELL SURFACE PIPE
ROBINSON HARDWARE CO.
GILROY CAL.

America's Telephones Lead the World
Service Best—Cost Lowest

from London "Daily Mail"

Why is it that Government ownership and management of the telephones is practically always a failure?

Why is it that throughout the length and breadth of Great Britain and the Continent hardly a single efficient long-distance service is to be found? Why is it that in New York one ...

from "Electrical Industries" (London)

THERE is a certain amount of satisfaction in the fact that Mr. Winston Churchill is angry over the freaks of the telephone the other day that he flung his receiver on the floor. As a member of the Government which purchased the telephone system, he deserve all the torture that Post Office working can inflict. But his rage ...

From "Le Petit Phare de Nantes," Paris

"But today I found I had to talk with Saint Malo, and, wishing to be put through quickly, I had my name inscribed on the waiting list first thing in the morning; the operator told me—though very amiably, I must confess—that I would have to wait thirteen hours and ten minutes (you are reading it right) in order to be put through."

Herr Haberland, Deputy, in the Reichstag

"The average time required to get a connection with Berlin is now 1½ hours. Our business life and trade suffer considerably on account of this lack of telephone facilities, which exists not only between Dusseldorf and Berlin and between Berlin and the West, but also between other towns, such as Strassburg, Antwerp, etc."

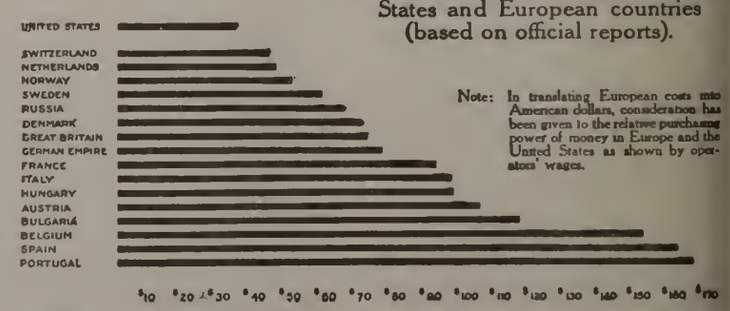
Dr. R. Luther, in the Dresdner Anzeiger

"In the year 1913, 36 years after the discovery of the electro-magnetic telephone, in the age of the beginning of wireless telegraphy, one of the largest cities of Germany, Dresden, with half a million inhabitants, is without adequate telephone facilities."

Herr Wendel, in The German Diet

"I refer here to Freiberg. There the entire telephone service is interrupted at 9 o'clock p. m. Five minutes after 9 o'clock it is impossible to obtain a telephone connection."

Real Average Cost of Telephone Service per year to a subscriber in the United States and European countries (based on official reports).



Note: In translating European costs into American dollars, consideration has been given to the relative purchasing power of money in Europe and the United States as shown by operators' wages.

These are the reasons why there are twelve times as many telephones for each hundred persons in the United States as in Europe

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

Cream Cooler for Hot Weather

OW butter prices, competition from New Zealand butter and ious other causes have made it cessary as never before to do erything to improve the quality of tter manufactured in California. e creameries are in large part do- quite well in manufacture and the rting point is for the dairyman to vide them with good cream.

The first essential in producing od cream is to see that the milking done under as clean conditions as ssible. After clean milk has been duced and run quickly through the eam separator, a very important ture is to have it cooled imme- tely and the animal heat removed. r this the folowing cheap and effi- nt cooler is advised by C. A. Stark- ather, inspector of the State Dairy reau, and is being used on a num-

oss Sections of Cooler. Fig. 1 (above) Side View Interior.

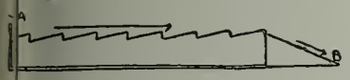


Fig. 2 (below) Flat View Interior.

r of dairies with excellent results. follows the design of coolers for- rly used in creameries before am- nia coolers were installed, but, of urse, is much smaller.

The design of the coolers is ex- ained by figures 1 and 2. The cooler best made about 8 inches wide, 5 t long and a couple of inches ough, weighing only three or four unds. A stream of cold water is n through the center, entering at " and passing out at "D." The et "C" is connected with the faucet by a hose, which is removed when separating is over and the cooler emptied and put away to drain and dry. A hose is attached to the outlet "D," taking the water away.

The cooler when in operation is placed under the separator spout "A" and the cream flows down it, running off at "B" into the cream can. The cooler is given only a very slight slope, so that the cream will flow very slowly.

The arrangement of the riffles is the most important point and the thing that makes the cooler so effective. It can be seen that these slope gradually on the upper side and abruptly on the lower. In fact, the slope on the upper side should be a little greater than the slope of the whole apparatus, so that the riffle acts as a slight dam to the cream and causes it to spread out over its whole surface, where it can get the full cooling effect of the flowing water inside. On any other kind of a surface the cream would be inclined to flow in a narrow stream and would not spread out so much. In such a case it would flow more rapidly and not be cooled so effectively. Mr. Starkweather states that the cream can be cooled almost to the temperature of water while the separation is going on. The exposure to air while cooling also removes any injurious odors that may have been absorbed in the barn.

From figure 2 it will be seen that the guides "G" are placed in the interior of the cooler to delay the flow of water and to send it first from one side to another. Arrows indicate the way they direct the water. In order to prevent the cooler from bursting, provided there is a good force of water, it is advisable to have the outlet larger than the inlet. It is also best to have the water enter at the lower end, so that the coolest water meets the coolest cream.

Such a cooler can be made by any plumber and should cost only $4 or $5. It is very light and convenient and by improving the keeping qualities of the cream as much as it does it should soon pay for itself several times over.

Costs Only $30 Freight Paid

One Man Stump Puller

One man does the work. Many have cleared an acre a day, pulling 24 inch and 36 inch stumps. Weight 90 pounds. Send for folder. Quick deliveries from Portland or Spokane.

W. E. MORRISON, Dept. I.
821 Riverside Ave., Spokane, Wash.

Burbank's Spineless Cactus Supports More Live Stock

per acre than any other forage generally grown, including alfalfa! It will produce five times more tonnage per acre on average land, without irrigation, than alfalfa on the best irrigated land. Cows producing 37 pounds of milk per day on an alfalfa feed have given 47 pounds daily on a Luther Burbank Spineless Cactus ration. Write for our

1914 Burbank Spineless Cactus Book

just issued. It tells all about this, the world's greatest forage; how, where and when to plant it; what you can expect from it; how it was evolved from the thorny cactus—a most interesting story, written by Luther Burbank himself. This book is FREE—yours for the writing of a postal card or letter.

The Luther Burbank Company is the sole distributer of the Luther Burbank horticultural productions and from no other source can you be assured of obtaining the genuine Luther Burbank creations. We have no agents for the sale of Spineless Cactus. You should bear this in mind because of the many misrepresentations by individuals and companies with intent to defraud and deceive. Look for the seal, as reproduced above, on what you buy. IT IS YOUR PROTECTION.

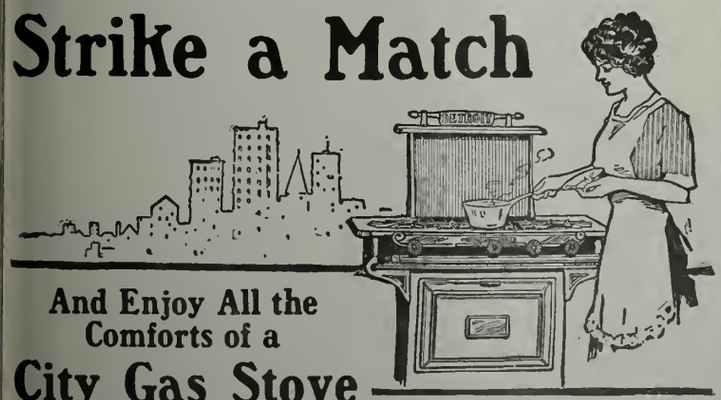
Write to-day for the 1914 Burbank Spineless Book O. F.

The Luther Burbank Company

Sole Distributer of the Burbank Horticultural Productions

Burbank Building San Francisco

Strike a Match



And Enjoy All the Comforts of a City Gas Stove No Matter Where You Live

Detroit Vapor Stoves

produce their own gas from kerosene, distillate or gasoline without any changes in the burners. They have no wicks, no perforated metal rings or anything that looks like a wick. Easy to use and easy to keep clean. They cook and bake perfectly. Your kitchen is always cool and comfortable and you have less work and less worry. Much cheaper than any other fuel, and the freedom from dirt, dust and ashes makes it easy to keep your house clean. Write us and we will tell you how you can procure this splendid stove.

CRIBBEN & SEXTON COMPANY
787-793 Brannan St., San Francisco, Cal.

Stack Your Hay and Alfalfa

Use Salt

Have you ever lost a crop of hay through musting—or your barn and hay through spontaneous combustion?

There is one sure way to prevent this—

Use Salt

When you stack the hay.

The salt more than pays for itself in the weight of the hay. There is a further gain in weight through moisture held—and the stock will eat up salted hay clean where unsalted hay will be mussed over and wasted.

20 pounds of salt should be used to each ton of hay. Stack three feet of hay, sprinkle the salt over this by hand. Then another layer of hay, more salt, and so on.

It Pays

QUALITY

BERKSHIRES

OUR BERKSHIRES ARE NOW BETTER THAN EVER

They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.

Send for Catalog.

Oak Grove Dairy Farm

WOODLAND, CALIFORNIA.

The ? of What Fertilizer

Blood Meal. Steam Bone Meal
Gypsum. Fishscrap.

Special Mixtures To Order

Immediate Shipments.
Write for Quotations.

Standard Fertilizer Co.

323 No. Los Angeles St.
Los Angeles, Cal.

Livestock Progress at Exposition

THE livestock department of the Panama-Pacific International Exposition has prepared in detail the classification for the car lots of fat cattle, sheep and hogs, which can be had by anyone desiring same by application to D. O. Lively, chief of the department of livestock, Exposition building, San Francisco. This is to be one of the leading features of the livestock display, as it is at the Chicago International, as in it are shown the best types of market cattle, ready for the block, in distinction to the breeding animals of the usual show ring. The prize money is to be large and it will attract many large and fine entries.

As a matter of fact, California is away behind the time in the finishing of cattle, sheep and hogs, and market stock when cut up cannot compare with the feed lot stock of the corn belt and Middle West. This feature of the livestock department should therefore be of big interest to California stockmen and it would do a valuable service if it would be the starting point of more careful feeding of stock for California markets. California breeders are getting into the game strong with show ring and breeding animals. The fat cattle classification ought to bring out as good a California display as the other parts of the stock show.

The department of livestock at the Exposition represents, according to the United States Department of Agriculture figures, $3,650,000,000 worth of stock, plus $814,000,000 worth of dairy products and $578,000,000 of poultry and poultry products, plus $5,020,000,000 in crops closely related to the livestock industry. It represents $271,770,668 worth of California farm products, including $77,584,300 in livestock, $34,950,552 in dairy products and $18,205,896 in poultry products.

The exhibits in the department of livestock will be shown in two grand divisions:

1. Competition for premiums, which will begin September 27, 1915, and end with the Exposition. In this competition there will be distributed $175,000 in prize money, offered by the Exposition, and approximately $75,000 additional, offered by the various breed record associations and other interests, thus making a grand total of about $250,000 to be distributed as prize money from all sources.

2. Flocks, herds and studs of all the important breeds of domestic animals and birds will be maintained on the grounds of the Exposition during its entire period from February 20 to December 4, not in competition for prizes, but as a continuous educational exhibit selected by competent authority as being the best of their several kinds and each typical of its breed. Animals and birds from these view herds and flocks may be sold and their places taken by others, so that the view herd or flock will remain intact, or they may enter in the competition for premiums in the fall, though not required to do so.

California Holsteins Shine

In a list of 268 advanced records of the Holstein Friesian Association arriving a few days ago California Holsteins stand forth strongly, heading two of the six classifications. Although California cow testing is a matter of very recent years, there are 19 California cows in the list, or one out of 14. The eight-year-old cow Edith Mandel Wayne of L. A. Hall, San Jose, tops the full aged list with 24.075 pounds of fat in seven days, and De Kol of Valley Mead 3d of A. W. Morris, Woodland, heads the junior four-year-old class with 20.316 pounds of fat. Other California breeders whose cows stand high in the list are: E. A. Stellar, Modesto; M. M. Holdridge, Modesto, and D. & H Rowles, Modesto. California cows have topped the list on several other occasions and appear to be getting more than their proportion of honors.

Grow the pigs from the start. Don't fatten them, but grow them, put on the muscle, form and bone. Build the frame and the fat can go on later. A fat little pig is in poor condition to grow. You want them smooth, mellow, stretchy, and you will then build a good form.

Burn all animals that die, no matter what the disease that caused their death.

Ask Your Dealer for

EL DORADO COCOANUT OIL CAKE

for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market to-day. If your dealer doesn't carry it, address

EL DORADO OIL WORKS
149 California St. San Francisco

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50

Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. ct. Use any injector, but Cutter's simplest and strongest. Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (our or any other), as it affords less protection than fresh. Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly. THE CUTTER LABORATORY, Berkeley, California.

Horsepower

Your horses can pull bigger loads if you grease your wagons with

MICA AXLE GREASE

Its the mica that does it. It works into the microscropic "roughness" of the spindle and makes a smooth bearing surface, perfectly lubricated, on which the wheel revolves without friction. No hot boxes when Mica Axle Grease is used. A little goes a long way. Ask your dealer for it.

Standard Oil Company
(CALIFORNIA)

Koveralls Keep Kids Kleen

Practical Heathful, Economical Garments for Small Children

Practical. Because they are made in one piece, and can be slipped on or off instantly. They fit and look well, and yet are loose and comfortable in every part.
Healthful. Far superior to bloomers. No tight elastic bands to stop free circulation of blood and retard freedom of motion.
Economical. Saving wear on good clothes—saving washing—so well made they are outgrown long before they are worn out.

Ask Your Dealer For **KOVERALLS**

ALL RIGHTS RESERVED

Made in high neck with long sleeves, or Dutch neck and elbow sleeves. Made of blue denim, or blue and white hickory stripes for all the year wear, and in a variety of lighter weight materials for summer wear. All garments trimmed with fast-color red or blue galatea. Sizes 1 to 8 years.

75c the suit A new suit FREE if it rips

Awarded Gold Medal at Mechanics' Fair 1913

If your dealer cannot supply you, we will send them, charges prepaid, on receipt of price, 75c each.

Made By

LEVI STRAUSS & CO., San Francisco

Can Sex in Cattle Be Controlled?

By L. H. Sullivan

F there is ever developed a system whereby the stock breeder can ontrol the sex of offspring, it will e a great thing for the business. here have been many theories put orth on the matter, but none have et been accepted as entirely depend- ble, nor have methods of prac- cally applying them been found. The ollowing is from L. H. Sullivan, at Creek, Shasta county, and was ritten to the Division of Animal usbandry of the University of Cali- ornia, being sent through Orchard nd Farm. The accuracy of the heory can be tested by every dairy- an or stock breeder of any sort and he best way to test it is for every- ne interested to note results on his wn cattle. We will be glad to have bservations reported to us.—Editor.)

To Livestock Department, Univer- ty of California: I would like to ubmit for your investigation a the- ry along the lines of sex control hich has proven true to me during he past four years of practice, both ith my own and nenghbors' cattle, ithout a single failure.

I find from investigation that there present in both male and female a repotency toward sex or a tendency produce sex of the parent kind nd of different degree in different nimals, which I will for convenience all sex potency. Sex potency is gov- rned by will power. It is strongly narked in the head and face by readth between ears, full medium igh forehead, strong, bright eyes set ide apart with a look of determin- tion, for male a masculine and for he female a decidedly feminine ap- earance. It can be noted in their ction and conduct. An animal who very young or very old or who is bad condition (sick), is weaker in ex potency than it would be in its rime condition.

In order to control the sex of off- pring I proceed as follows: If a hale offspring is wanted from a cer- ain cow, I mate her with a bull hose signs of sex potency is strong- r and better marked, and if a fe- hale offspring is wanted, I mate her ith a bull whose signs are weaker. he sex of the offspring always fol- ows the stronger or more sex potent.

The records of your department ill, doubtless, show the following acts: Certain cows bred to a bull ill produce heifer calves each sea- on, other cows bred to the same bull ill produce bull calves, while in ther cows the sex will vary different easons.

I could have some photographs aken of animals which I think would ssist in explaining this theory.

How to Foretell Sex.

The following was sent to Or- hard and Farm by Mr. Sullivan upon nethods of foretelling the sex of a alf before birth.

To Orchard and Farm: I find rom investigation that the posi- ion of carrying the unborn by the nother is different according to sex f the offspring.

In case the offspring is a male, the welling or enlargement of the moth- r is in the abdomen and is very oticeable through and about the hips nd hind parts, while when the off- pring is a female, the swelling of the nother is confined to the abdomen or elly and scarcely noticeable in the ther hind parts—it has more the look f a pot-belly, and further:

The movements of the offspring in ase of a male are of a rough, strong nd vigorous nature, which is natural n the male, while in the case of a emale the movements are more re- ned and delicate. The exceptions to he latter part are where the male is orn delicate and weakly and where the female is very vigorous when born.

The movements are more noticeable when the mother is at rest and can be felt by placing the hand low down on the side in front of the udder.

To be brief, the female is carried and the swelling confined principallly in the front part or belly. The move- ments are delicate and refined, while the male is carried more over the hips, where the swelling is very no- ticeable and the movements of the un- born are rough and vigorous.

Comments by Prof. True.

I have read Mr. Sullivan's state- ment on sex control with interest, but must confess that there is nothing in my experience nor in the experi- ence of investigators who have given years of careful study to this subject to substantiate this theory. I am reminded by his statement that his theory has been verified without ex- ception during the last three or four years, of an equally positive statement of a friend of mine in this State who has an absolutely different theory for control of sex and who believes just as positively that he knows how to do it.

I cannot help thinking that in both cases the apparent proof is simply a matter of coincidence and that if the investigations were continued for more time and with a larger number of ani- mals (he does not state what num- ber of animals have been observed) that the evidence would, perhaps, be lessened. Results of the study of physiology of reproduction during re- cent years seem to indicate that there is reason to believe that we are on the way to learning how sex is deter- mined in the embryo, but there is nothing to indicate that this may be controlled. Prof. Castle of Harvard University, one of the recognized au- thorities on heredity, in his chapter on sex control in his book on "Hered- ity in its Relation to Evolution and Animal Breeding," published last year, says that it is highly improbable that the breeder will ever be able to con- trol sex; that the results of this study are negative; that their practical value is to be found in teaching us our lim- itations; and that, "we may thus save time from useless attempts to control what is uncontrollable and devote it to more profitable employment."

An Opposite Theory.

(It might be well to state that there is a more or less popular theory re- garding sex of offspring that is just the reverse of that put forward by Mr. Sullivan, which is that the sex of the offspring follows that of the stronger or most prepotent parent. In other words, if the sire is stronger in pre- potency than the dam, the offspring will most likely be a female, and if the dam is the most prepotent animal the offspring will most likely be a male. In fact, this theory is ad- vanced as a reason for progress in dairy breeding. It is said that won- derful cows transmit their milking powers through their sons more mark- edly than through their daughters, that the granddaughters by a son are more likely to have the desirable traits strongly marked than have the granddaughters along female line direct. This, if so, enables the milk- ing character of a fine cow to be dis- tributed over more descendants than if daughter followed dam, and son fol- lowed sire, more than as figured under this system.

The signs of prepotency named by Mr. Sullivan, broad head, bright eye, spirit and sex characteristics displayed in feature and action, are everywhere recognized as being highly desirable. Generally speaking, for the best re- sults we would breed to the most pre- potent animals and let the sex look after itself, rather than to try to in- fluence sex by having one parent lack- ing at all in the prepotency it might have.—Editor.)

50 Cows Average 717 Pounds Butter

This is the average of the 50 cows that have completed yearly semi-official tests to date in our herd.

Did you ever consider what it would mean to place a young bull in your herd, bred in lines that are producing these results? It will mean increased production and value for every animal in the herd. He will produce the kind of stock that are in the greatest demand at high prices.

INDIVIDUALITY, PRODUCTION and TRANSMIT- TING ABILITY are essential in the choice of a herd bull. These are the qualifications of the young bulls that we offer as low as $150.00.

Engage your calf for use next fall. Your in- quiries will be given prompt attention.

A. W. MORRIS & SONS CORPORATION

Holstein Friesian Cattle **Woodland, California**

A RARE OPPORTUNITY

I will visit all Eastern Fairs this year for the purpose of buying pure-bred Live Stock for California breeders. I will also personally select specimens of the different breeds for the purpose of strengthening California Herds and Flocks at the Panama-Pacific Exposition. Correspondence invited. Address

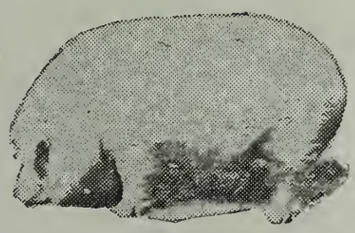
W. M. CARRUTHERS, 721 HEARST BLDG., SAN FRANCISCO

DORSET SHEEP AND HOLSTEIN CATTLE

One of the oldest and largest breeding establishments in the East. Our specialty: High-Class Show and Breeding Animals. Stock for sale. Write for prices, etc.

TRANQUILLITY FARMS

Arthur Danks, Mgr. Allamuchy, N. J.



This is "Brendel's Beauty," No. 56072, Grand Champion Sow, Chicago International, 1913.

Her sire is "Jim's Dandy," sire of Gr. Champ. barrow of all breeds at International of 1911. She is bred for May farrow to our herd boar, "Patternmaker," No. 26677, likewise a winner at 1913 International. He is a wonderful young boar, bred in the purple. His dam is a wonder- ful brood sow and was Indiana Gr. Ch. 1912.

BRENDEL'S BEAUTY INTERNATIONAL GR. CHAMPION COMES HERE

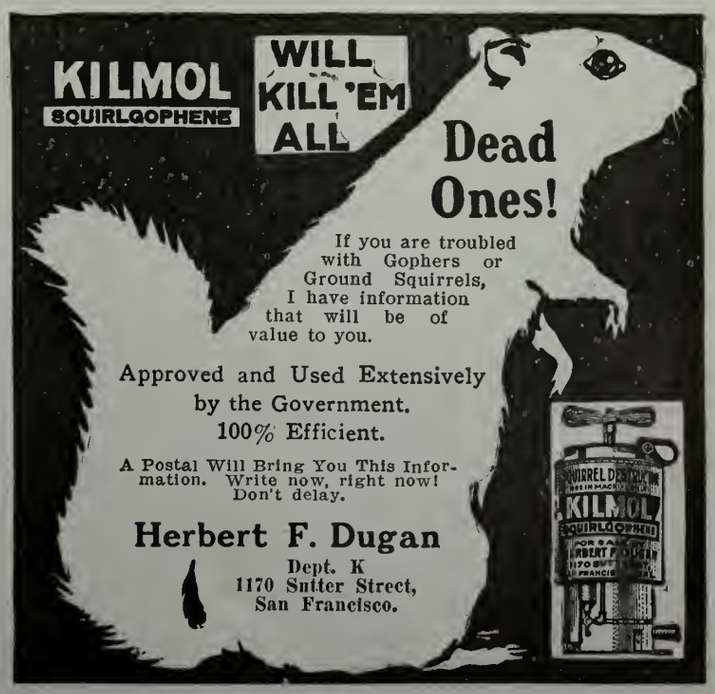
CHESTER WHITES BEST

We have also added to our herd of brood sows, **Dolly Varden, 22nd, No. 53998, Gr. Champ. Sow, Indiana State Fair, 1913.** These two sows are refined, but each weighed over 500 pounds under one year. **Our broodstock is bred in the purple.** 1913 farrows all sold out. A fine lot of 1914 spring pigs now on hand and to arrive. Also young bred sows. Farms in Yolo and Santa Cruz counties.

Address all inquiries to

BRUCE CORNWALL,

914 Kohl Bld. San Francisco



The Intradermal Tuberculin Test

THE University of California has just issued a bulletin by Dr. C. M. Haring and Ralph M. Bell on the Intradermal Tuberculin Test for Tuberculosis in Cattle and Hogs, which contains results of investigations on this important matter that should be carefully examined by every dairyman who wishes to know for himself the facts about tuberculosis detection and control. The bulletin deals especially with the intradermal test in which the tuberculin is injected into the skin, not beneath it into the circulation, as is the case with the standard, or subcutaneous method of testing. As this new method of testing may prove more satisfactory than the standard method and the tests were very elaborate and complete, this bulletin seems to be one of the most valuable contributions upon the matter made in recent years. Only a few of the points regarding it will be given here.

In the intradermal test only small amounts of tuberculin are used, 1-20 to 1-4 c.c., as compared with 1 to 4 c.c. in the ordinary way. The indications of tuberculosis in the ordinary test are given by a rise in temperature. In this method the skin swells provided the animal is tubercular. As fever may result under certain conditions in the ordinary test when no tuberculosis is present, and skin swellings in the intradermal test result only from tuberculosis, or have certain distinct characteristics if caused by other conditions, the intradermal test can be used in certain places where the ordinary test is unsatisfactory. It requires, however, more skill, or at least, more practice and observation to do properly than does the subcutaneous test.

The most suitable place to make injections is in one of the folds of the skin on the under side of the base of the tail. The swelling is about the size of a walnut or an egg and persists for quite a long period, which makes it easier to detect than a rise of temperature, the ordinary indication of the present test. A very important feature is that both the intradermal and ordinary test can be conducted at the same time to insure accuracy, and a veterinarian can learn to make the intradermal test without affecting results on the other test. Likewise cattle cannot be "plugged" for the intradermal test, as previous injections of tuberculin do not prevent reactions, as is the case with the usual test. A handicap to accuracy is that different manufacturers make different strengths of tuberculin or put it up in somewhat different forms, and what is satisfactory with one kind of tuberculin may not be with another.

It is unnecessary to say for anybody who has kept close track of the tuberculin test that the reason for the experiments related in the bulletin is that the tuberculin test as it stands is in a number of ways unreliable, and the intradermal test is an attempt to make testing more reliable and satisfactory. Drs. Haring and Bell appear to believe that it is an advance over the usual method of testing.

Very naturally tests by both methods gave similar results in the large majority of cases. The intradermal test, however, developed reactions in a number of instances where the subcutaneous test did not, and autopsies proved it correct. In one or two cases the subcutaneous test detected the disease when the intradermal test did not, and in one or two cases also the intradermal test gave reactions on nontubercular cows (as far as the autopsy showed) when the subcutaneous test did not. Taking the results as a whole the intradermal method seems superior to the subcutaneous method. With very little doubt it is vastly superior to the other when the cattle have some physical or mental disturbance which makes the subcutaneous test misleading.

It might be mentioned also that the intradermal test is used with excellent results on hogs.

As there is a great deal of opposition to the tuberculin test as usually applied (apparently on very good grounds), and every bit of light on the matter is highly desirable, the results here, based on 4,926 intradermal tests and many of other kinds, on 4,001 cattle, make a very valuable and interesting bulletin that is worth deep attention.

Care of the Cream Cans

The matter of caring properly for the cans used in taking the cream from dairy to creamery is one of the most important things connected with producing good cream. Improperly cleaned cans, or cans in which there is just a little milk material that has decomposed, will injure cream a good deal between dairy and creamery.

Heat and air are two of the biggest cleansers of the cans. When a can is washed as good as most are and put over the cream jet as most are, it will be all right if it is exposed fully to the air. If it is not, but is closed tightly, an awful odor is likely to develop, which is very bad for the cream, even with the fairly good cleansing given on the average creamery. Frequently after the steam jet has been used the cover is put on tight and the can goes closed on the cream wagon, remains closed on the dairy and is opened only to put cream in, when it has a bad odor, which the dairyman considers as a matter of course.

A most excellent thing for milk pails and cream cans is a framework on the south side of the milk room, usually upon which the cans can stand open, top downwards, so that the air gets all through them. The air and sunlight then purify the utensils absolutely, provided they have been washed well with cold and hot water. It is even better if the stand can be screened to keep the flies from getting in the cans. Cans kept like this for some time smell sweet and clean.

Lack of this care and the fact that cans are kept closed continually after leaving the creamery are responsible for a good deal of trouble. If, however, the creamery dies its cans before sending them out, they will be sweet and clean whether closed or not, and it is a big advantage often to a creamery to install a good drier.

Enough Snow on Mountains

Although the winter has been warm, the abundant rainfall has brought with it a fair amount of snow, so that the last snowfall bulletin of the United States Department of Agriculure, California Section, dated April 11, 1914, states that snow conditions are good for stream flow during the summer. It states:

"The snowfall in the mountains of California during March was unusually light, except in the Siskiyou, where heavy snow fell during the latter part of the month. No snow fell at some of the stations in the eastern portion of the northern Sierra. There is a large amount of well-packed and frozen snow in the mountains containing more than the usual amount of water. The present condition of the snow indicates a slow melting with an ample supply of water for the coming season."

The depth of the snow is shown to average rather less than usual, but the way it is packed more than makes up for this.

Holstein Breeders Organize

The California Holstein Breeders' Association, which has been inactive the last year and a half, was reorganized at Modesto early in April at a gathering of many of the leading Holstein men of California and an excellent start made for a live and vigorous association. B. K. Davis of the Sleepy Hollow herd was chosen president, and James McAllister of Chino, secretary-treasurer. The executive committee is composed of G. U. Clark, Hanford; A. W. Morris, Woodland, and A. B. Kendrick, Modesto. A number of vice-presidents will be chosen for active work throughout California. The membership is limited to breeders of pure bred Holstein-Friesian cattle.

A great amount of work is planned for the Panama-Pacific Exposition and in order to enable this to be completed properly the membership fee for the year is to be $5. This fee will be changed in all probability after the exposition is over. Every Holstein breeder in California is urged to send his name with $5 to Secretary-Treasurer McAllister in order to give the association the support it needs.

TO
Sheep Breeders
and
Goat Breeders

The Shepherd's Journal is the talk of the sheep growing world, because of its beauty and wonderfully practical worth. Nothing like it published. Send for free sample copy to-day and be convinced. Address 309 Monadnock Bldg., Chicago, Ill.

PATENTS That Protect and Pa
Send Sketch or Model f
FREE SEARCH
Books, Advice, Searches and FREE
Big List of Inventions Wanted
Watson E. Coleman, Patent Lawyer, Wash., D. C

STEY-BRAE AYRSHIRES
BULLS FOR SALE
From imported cows. These bulls are large, with good colors.
For Particulars and Prices Address
E. B. McFARLAND, San Mateo, Cal.

Find Out How
Barn Work Pays Profit

Star Goods Sold by Reliable Dealers Everywhere

It's time you employed means of *offsetting* the increasing cost of barn work. Every dollar you save on labor is a profit-dollar earned. Make your barn work *pay* more by saving *more on it.* Go about it the safe, sane, sure way. Investigate—

STAR Barn Equipment
(Star Stalls, Stanchions and Litter Carriers)

Star Stalls are made in single units. Buy as many or as few as you want—let your stalls grow with your herd. The only Stall offering this big advantage. Star Alignment Device keeps animals all lined up to the gutter. Saves labor. Let us tell you *all* about it.

The Giant Star Stanchion is instantly adjustable to smallest calf or largest bull. A 1¼ in. kiln dried maple lining firmly held in a "U Bar" affords a smooth surface for the animals neck. Star Sure Stop keeps animals from poking heads into wrong place. Labor-saving, one-hand, one-motion *lock* that *stays* locked.

Star Litter and Feed Carriers enables boy to do man's work, and do it quicker—better. Saves wages—pays cost first year. Absolutely the speediest, surest, easiest operating and most durable carrier on the market. Exclusive features make it so.

If You're Building or Remodeling—

If you are building or remodeling your barn, send us a rough sketch of floor plan. We'll send free and without one bit of obligation on your part, a Blue Print, especially drawn for you by one of our experts. This blue print will show you how you can save big money and have a better barn. Send sketch with coupon. Do it today.

HUNT, HELM, FERRIS & CO.
43 Hunt St., Harvard, Ill.

FREE Send Coupon For 100-Page Book!

HUNT, HELM, FERRIS & CO.
43 Hunt St., Harvard, Ill.
Gentlemen: Please send me complete information about Star Barn Equipment.
Name .....
Address .....
State .....

PACIFIC COAST DISTRIBUTORS:
PACIFIC DAIRY MACHINERY CO. San Francisco, Ca
MONROE & CRISELL Portland, Orego
DAIRY MACHINERY CO. Seattle, Was

Australia at Panama Pacific Exposition

By W. M. Carruthers.

A FEW days ago the writer had the pleasure of meeting Neil eilsen, Commissioner from Austra- a for the Panama-Pacific Interna- onal Exposition. Mr. Neilsen's ief interest seems to be the live- ock department and he is now ar- anging through its chief (D. O. ively) to make a large exhibit.

It will be necessary to regulate our uarantine laws before an Australian hibit of livestock can come to the ores of our country, as the present ws are very stringent and the Aus- alian Government thinks that we ould lower our barriers and allow eir stock to come in without much uarantine regulating. Mr. Neilsen tends starting for Washington, D. ., in a few days to take up this atter with Dr. Melvin, chief of the ureau of Livestock, and there is o doubt but that matters will be tisfactorily arranged.

D. O. Lively, chief of the livestock epartment of the Exposition, has rrangements well on the way for he establishment of a quarantine tation near San Francisco, which, hen completed, will be a great boost or Pacific Coast livestock interests.

The quarantine laws of Australia, n comparison with those of all other ountries, are the most rigid ever assed by a government. The writer ersonally experienced this in a hipment of two jacks and three ennets from San Francisco to Sidney few months ago. These animals ere of rare good breeding and had een tested with the Mallein test by United States Government officials nd cleared the port of San Fran- isco in excellent condition. Upon rriving at Sidney these animals ere given the Mallein test and hirty days later it was again given efore they could be landed on Aus- ralian soil. Mr. Neilsen's reply to ny inquiry as to why their quar- ntine laws are so stringent was, The chief revenue of Australia is rom livestock, therefore we have to se the utmost precaution to prevent isease getting into our country."

It is the intention of the Austra- ian Government to make a large ex- ibit of fine wool sheep at the Pana- ma-Pacific Exposition. The pro- luction of mutton in Australia is a econdary consideration, as sheep are roduced wholly for wool. When he sheep get too old to produce wool hey are usually boiled down into allow, which is shipped to the Lon- lon market, where it is very readily taken care of. Considering the method of running sheep in Australia, t will readily be understood why the Australian mutton carcasses which are now being shipped to San Francisco are mostly large, heavy, and of a coarse grain. Very few young sheep or lambs are slaugh- tered in Australia for the mutton trade, and these few usually find their way to the London or Liver- pool market.

Australia expects also to give a demonstration of the workings of the collie dog in connection with the tending of sheep. This demonstration will take place in the park surround- ed by the race track. Mr. Neilsen thinks that no country on earth has developed the shepherd dog to as high a state of efficiency as Australia.

They intend also to give a demon- stration of the method of milking cows in Australia. There is a gov- ernment law in that country which provides that all cows must be milked under cover, so that the demonstration with the milking ma- chines will be well worth seeing, as it will be carried on at the Fair grounds.

The Chicago Flexible Shaft Com- pany are displaying a lively interest in the great shearing contest which will take place at the Panama-Pacific Exposition, and Mr. Burch, editor of the American Sheep Breeder, is at present in San Francisco completing arrangements for this novel feature, which should appeal to the Austra- lian shearers.

Mr. Neilsen states that it is the in- tention of Australia to compete in this contest. It is their intention also to demonstrate how the fleece should be cared for after it is sheared from the sheep; the grading of the wool and other scientific facts pertaining to the care of the fleece. All wool- growers of the Pacific Coast should be interested in this demonstration, as it is conceded that Australia has the method of marketing wool down to a finer point than any other na- tion of the world, and the informa- tion gleaned from these people will prove very valuable.

Australia has 150,000,000 sheep and 40,000,000 cattle to a population of 5,000,000 people.

The Jersey Consignment Sale

For several reasons there was a great deal of attention paid by breed- ers in the first annual consignment sale of pure bred Jersey cattle held at Modesto April 2, on the ranch of G. O. Hillier. The consignment sale offers an opportunity for selecting from a large number of animals and getting just what is needed in the way of breeding or type for one's herd all at one trip and with little delay or extra expense. At this sale 96 head of pure bred Jerseys, a great proportion of them being cows and heifers, were sold by four breeders. A large crowd was present, the seats on both sides of the Hillier barn, from floor to roof, being filled and a number standing, showing the inter- est that was displayed. Prices for a good many animals were rather un- satisfactory, owing to low prices for butter fat, which tends to reduce prices of all kinds of dairy cattle. This also made money a little tight and discouraged many breeders from giving their note. Allowing for this disadvantage, the sale could be con- sidered quite a success, so that the 1915 sale will very probably be very largely attended and a large number of cattle sold. There is talk of hav- ing both Holsteins and Jerseys con- signed next year, each breed being sold on a different day.

Consignment sales such as this are very desirable, owing to an absolute guarantee of animals being as repre- sented, so that there is no danger of buying an animal that is an aborter or a non-breeder, or otherwise un- sound. As a catalogue is issued, a possible buyer can study the pedigree of every animal before the sale and know just what he is getting. All animals are also sold unreservedly to the highest bidder and a breeder ex- pecting to increase his herd is sure of getting what he wants at reasonable prices.

As nearly 100 head are sold in a few hours, there was pretty quick action and excellent work by the auc- tioneers, Ben A. Rhoades and J. C. Corley, which gave satisfaction to buyers and consignors. The latter were G. O. Hillier, J. N. Lester, W. A. Bradley and R. L. Waltz. Mr. Hillier leaves shortly for the Island of Jersey and will purchase some of the best animals there to bring to California.

In the Hog Lot

The pure bred hog will mature and come into money more quickly than a scrub, and bring more money for the same weight, at that.

Don't select a heavy, lazy sow for a breeder. She should be mild in dis- position, but possessed of sufficient energy to take exercise.

Sugar Valley Shropshires

Are Not SURPASSED for QUALITY by Any FLOCK in AMERICA

I ALWAYS HAVE ON HAND choice flock headers, breeding ewes and choice show stock that cannot be surpassed in quality at the prices I ask. In my flock runs the Best Blood of the Best English Flocks. IF YOU ONCE BUY OF ME YOU WILL ALWAYS BUY. Come and see my flock; it will please you. My farm is easy to reach from Chicago. If you want first-class Shropshire Sheep write me before buying at extravagant prices.

I won Champion Ram, First on Pen of Ewe Lambs and First on Flock at the last International Show with stock of my own breeding.

L. KAMMERER, Proprietor, BRODHEAD, WIS.

Mix Your Rations With Cocoanut Oil Cake Meal

A Pure, Palatable Food Product Rich in Digestible Protein

Increases butter fat in milk,
Makes hens lay more eggs,
Makes hogs fat with clean flesh.

Free Sample and a copy of our booklet containing valuable information on the subject of "Successful Feeding" sent gladly on request. Write to-day.

Address Department C

PACIFIC OIL & LEAD WORKS

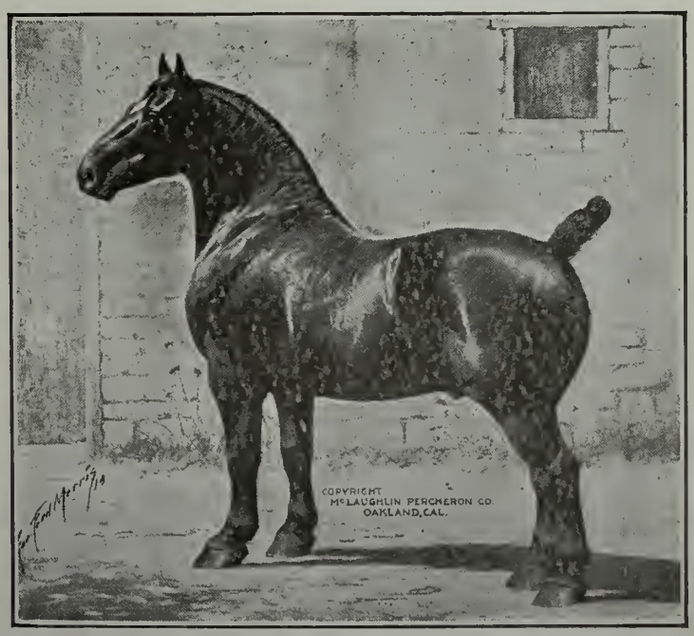
Manufacturers

155 Townsend St., San Francisco, Cal.

If Your Dealer Can't Quote Prices Write Us Direct

America's Leading Horse Importers

PERCHERONS



One of Our Recent Importations. Distinctly the "McLaughlin Type."

At the great INTERNATIONAL LIVESTOCK EXPOSITION, Chicago, Dec., 1913, our stallions won Two Gold Medals; Two Championship Ribbons and other honors. At the California State Fair, 1913, we won every FIRST PRIZE in every class competed for, including every CHAMPIONSHIP.

When you want the BEST, let us hear from you.

Western Stables, 47th and San Pablo Ave., Oakland, California.

McLAUGHLIN PERCHERON COMPANY

THE FARMERS' MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Chicks of Thoroughbred S. C. White Leghorns, 200-egg strain. Not simply chicks, but stock that lays and pays; price $8.50 per 100 for May and June. I hatch only from my own yards, 1,400 breeding hens. Send for folder. **Buena Vista Poultry Yards, F. F. Dobbel, Box 33, Sonoma, Cal.**

S. C. White Leghorns—Baby chicks for sale; baby chicks, day old, $10 per hundred, and $90 per thousand. Eggs for hatching, $4.50 per hundred. Cockerels and pullets, prices on application. **The Model Poultry Farm, Box L, Irvington, Cal. A. de Campos, Prop.**

Turkeys, Bourbon Red, White Holland, Mammoth Black, eggs $5 per dozen; males and females in all three varieties 1st prize winners Los Angeles show 1914; strong competition; turkeys range in separate yards. **Mrs. B. Hocking, Guasti, Cal.**

Campines, Silver and Golden—Improved American type only; eggs for hatching; Silvers from $2.50 to $5 per setting, according to quality; Goldens, $5 per setting. **Arthur King, Box 30, Route 1, San Luis Obispo.** Member American and Pacific Coast Campine Clubs.

Brown Leghorns—A fine lot of breeding and exhibition cockerals, stock from the best Eastern breeders; also good Buff Orpington hens and grown pullets; eggs for hatching. **Fredensborg Ranch, Suisun, Cal.**

The Goodacre Blue Ribbon Strains of Heavy Layers. New catalogue free. Customers say ours start early and never stop; sure winter layers; Anconas, Reds; nothing better. **Goodacre Bros., Compton, Cal.**

PETALUMA HATCHERY—Now booking orders for spring. Send for circular. Can ship chicks to points reached in three days. When ordering why not get the best? **L. W. Clark, Petaluma, Calif.**

True Blue Andalusians, imported strain. Eggs, $2.00 for 14; $9.00 per 100. The best on the Coast. Write for circulars with winnings. **J. R. Huddleston, 342 Edgeware Road, Los Angeles, Cal.**

Free—66-page catalogue, describes in detail prices, etc., on 19 kinds of baby chicks, hatching eggs, incubators, brooders, etc. We ship everywhere. **The Pioneer Hatchery Co., 112 East Eighth street, Los Angeles, Cal.**

500 White Leghorns, select layers and breeders, for July delivery, at half price; making room for 1,000 youngsters; booking orders now. **Pebbleside Poultry Farm and Hatchery, Sunnyvale, Cal.**

Incubator Chicks and hatching eggs—White Rock, Black Minorca, White, Brown and Buff Leghorns. All high-class stock. Send for booklet of prices. **Mahnjo Farm, P. O. Box 597, Sacramento, Cal.**

White Leghorn Baby Chicks from stock selected by Hogan's system for laying qualities and of great vitality, $9 per 100. **Arthur King, Box 30, Route 1, San Luis Obispo, Cal.** See my Campine advertisement.

Selected Eggs for hatching from Toulouse geese and M. B. turkeys, 21 cents each; pearl guinea and runner duck eggs, 8 cents each; also Belgium Hares. **J. Wellborn, Warren, Oregon.**

Anconn Eggs by insured parcel post from my purebred persistent laying strain of mottled Anconas, $1.50 per 15 postpaid. **E. T. W. Barnes, Sisson, Cal.**

Croley's Growing Chick Feed makes strong and healthy pullets. Write us for free daily egg record book. **Geo. H. Croley Co., Inc., 631-637 Brannan st., San Francisco.**

Silver Campines and Buttercups. Eggs for hatching, $3.00 per 15. Buttercup stock for sale. As good as can be found in the West. **Paul McCulloch, Box 1123, Sacramento, Cal.**

Miles' Anconas—All eggs half price for balance of season, your chance to secure the best at the lowest cost. Write to-day. **L. Miles, 511 West 17th st., Santa Ana, Cal.**

Order Mammoth Bronze Turkey eggs from largest turkey ranch in Stanislaus county, $3 per setting. Address **Crow's Landing Turkey Ranch, Box 227, Crow's Landing.**

White Minorca Eggs for hatching; hens for sale; reasonable price. **T. H. Bowen, Route 2, Santa Ana, Cal.**

If You Want Eggs, get Andalusians. **Daniel Calbreath, Monmouth, Oregon.**

POULTRY—Continued.

Baby Chicks—Orders taken now for S. C. White Leghorns from vigorous, free range hens; price $6.50 per 100. **H. P. Hansen, R. 4, box 177, Petaluma, Cal.**

Rhode Island Reds Exclusively—Eggs $6 per 100; day-old chicks $15 per 100. Cash with orders, or stamp for reply. **L. W. Neilsen, R. 2, box 1, Petaluma, Cal.**

Trap-Nested S. C. White Leghorns—Cockerels, breeders, eggs and chicks. **Arthur R. Schroeder, Box 22, San Gregorio, Cal.**

BABY CHIX AND EGGS—From grand laying strain of S. C. Rhode Island Reds. **Inwood Poultry Farm, Box 192, Folsom, Cal.**

For Sale—Light Brahma eggs, $1.50 per 15; from as fine a flock as there is in the State. **W. F. Kapplinger, Salem, Ore., R. 6.**

High-Class White Wyandottes, 15 eggs $1, 100 $5; circular exhibition matings, free. **F. E. Crouse, Ossian, Iowa.**

Albert M. Hurl, Clements, Cal. (successor to Ed. Hart), Mammoth bronze turkeys and eggs for sale. (Circulars.)

Single Comb Reds, Tompkins and De Graff Strain Eggs $2.50 per 15; fertility guaranteed. **Alex. A. Peterson, 1453 20th Ave. (Sunset), San Francisco.**

French Houdan Eggs, $1.50 per 13; Black Minorca and Rhode Island Red eggs, $1 per 15; all from choice stock. **Mrs. B. Hocking, Guasti, Cal.**

White Cornish Eggs, for remainder of season, $2.00 per 15; limited number Sicilian Buttercups at $3.00 per 15. **Mrs. Geo. L. Stafford, Kelso, Calif.**

A Fortune in Eggs—New Method Egg Preserver. Particulars for free recipe, write **Golden Remedies Mfg. Co., Sonoma, Calif.**

Barred Plymouth Rocks—"The kind that win and lay." Eggs for hatching and stock for sale. **Chas. H. Vodden, Box 693, Los Gatos, Cal.**

R. I. Red Eggs and Chix from great laying strain of **Inwood Poultry Farm, box 192, Folsom, Cal.**

Ring-Necked China Pheasants for Sale—Also eggs in season. Address **T. D. Morris, Agua Caliente, Sonoma Co., Cal.**

Ancona's—Howard's world beaters for laying eggs, $1.50 setting, $7 100. **Mrs. C. M. Howard, Otay, Cal.**

The Buff Orpingtons You Want—Eggs for hatching; breeding birds for sale. **Ernest L. Wilder, Los Gatos, Cal.**

Japanese Fumigation Nest Egg kills all insects; sample 10c. **Lee-Elmer Sales Co., 731 L St., Sacramento, California.**

MACHINERY AND SUPPLIES

For Sale—Farming Machinery—One new Case 60 h. p. steam engine and new separator, 32-inch cylinder, with blower and recleaner; also two new sections of John Deere steam plow. $1,500, or may trade for live stock. **Box 83, Heber, Imperial county, Cal.**

"Orchardist"—For sale reasonable, improved Johnson tractor, almost new. Does work of 12 horses. Just the thing you need to work up your orchard. **See J. A. Winkelman, Mayhews, Sacramento county, Cal.**

HOUSEHOLD SUPPLIES

"We pay the freight"—To reduce the high cost of living, send for our Wholesale to Consumer Catalogue. The Direct Supply Co. has combined with us. **Smith's Cash Store, 110 Clay st., San Francisco.**

AGENTS WANTED

Manufacture and sell in your locality, Furniture Polish, Window Polishing Powder and Metal Polish; formulas for all 50c. **Bear Formula Co., 1640 Grove, San Francisco.**

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

Sell Silverware Polishing Cloths—Big profits; 25c brings 2 samples and 3 samples other goods. **Renner Company, Postoffice Box 222, San Francisco, Cal.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

LIVESTOCK

Ohio Improved Chesters (O. I. C.) now ready, weaned pigs, both sexes; from big, mated sows and by extra heavy-boned boars; fall boars, now ready for service; bred sows and gilts; all stock immunized against hog cholera, by the double treatment, administered by a competent practicing veterinarian. Free registration with every animal. **C. B. Cunningham, Mills, Sacramento County, Califor. 'a.**

Grape Wild Farm Thoroughbreds—Guernsey Bulls of Advanced Register Breeding. Berkshire Hogs. Largest herd. Best Eastern strains. All ages for sale. **A. B. Humphrey, Prop., Mayhews, Sacramento Co., Cal.**

Tamworths—The big red bacon and block hog. Send for circular and prices. **Cottle & Hobson Co., Amsterdam, Merced County, Cal.**

Glenview Poland China stock for sale—**Chas. R. Hanna, R. D. 3, Riverside, Cal.**

Mulefoot hogs are best for Pacific Coast. For information write **John Dunlap, Williamsport, Ohio.**

Registered Duroc Hogs, $15, at weaning time. Out of champion and sires. **Ed. E. Johnson, Turlock, Cal.**

Registered Berkshires, $10, at weaning time. **M. D. Good, Mt. Vernon, Wash.**

MISCELLANEOUS—FOR SALE

Building Material, new and second-hand; largest stock, graded, guaranteed. Symon Bros., wreckers—Head-quarters complete material for entire house, foundation to roof; send estimate; our prices are not always the lowest, but considering the **grade, the quantity** to select from, **saving** to order, etc., we save you 25%; our yards are open for your inspection; our methods fully demonstrated; operating our own saws guarantees you proper dimensions; our own teams and men for loading speedy service; we order and load cars, relieving you of any **trouble**; you choose your stock, we do the rest; remember, our stock comprises everything connected with a building; short miscellaneous lengths in lumber one-half (½) regular second-hand price; buy where you are insured. **See our policy.** Satisfaction on every order guaranteed or money refunded. **Symon Brothers, leading wreckers, 11th and Market sts. and 1679 Market st.**

Second-hand and new Water Pipe—All sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Second-Hand Pipe—Largest dealers in standard pipe and screw casings; prices right; guaranteed first-class. **Pacific Pipe Co., Main and Howard sts.**

Special Prices to Consumer on Cedar Fence Posts and Poles. G. R. Kirk Co., 508 Berlin Bldg., Tacoma, Wash.

BUSINESS CHANCES

Free for Six Months—My special offer to introduce my magazine "Investing for Profit." It is worth $10 a copy to anyone who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how anyone, no matter how poor, CAN acquire riches. INVESTING FOR PROFIT is the only progressive financial journal published. It shows how $100 grows to $2,200. Write NOW and I'll send it six months free. **H. L. Harber, 499-20W Jackson Blvd., Chicago.**

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

SALESMEN WANTED

Wanted—Responsible party to take charge of our business in each county handling sale of automatic combination tool, a combined wire fence stretcher, post puller, lifting jack, etc. Lifts or pulls 3 tons, weighs 24 pounds. Sells readily to farmers, shops, contractors, etc. No experience necessary. Descriptive catalogue, prices and terms free upon request. **Harrah Mfg. Co., Drawer O., Bloomfield, Indiana.**

HELP WANTED

Wanted—First class walnut grafters to graft walnuts by the 1,000, or day work, as desired. Address Van Nuys Nursery Co., Van Nuys, Cal.

REAL ESTATE

Victoria, Australia, wants settlers—Special inducements offered by State Government, which owns lands, water, railways and free schools; excellent climate; resembles California; no extreme heat or cold; small deposit and 31½ years for purchase of lands adapted to every kind of culture; citrus fruits, apples and pears; wheat, corn, alfalfa, sugar beets; dairying, hog raising, etc.; ample markets; exceptional opportunities in irrigated districts; reduced passages for approved settlers; free particulars from **F. T. A. Friesse, Box T, 687 Market st., San Francisco.**

A Bargain—377 acres well improved dairy ranch; 240 a. can be cultivated, balance pasture and timber. If taken at once picked dairy herd of 30 Jerseys, 25 hogs, 3 horses, complete line of farming machinery, including traction engine, and 160 a. in crops go with the place. Rural delivery and telephone; close to school and church; 3½ miles to town and R. R.; fine hunting and fishing. Price only $60.00 per acre. Write for terms and details to **Robt. H. Frazer (Owner), Springfield, Lane Co., Oregon, R. D. 2.**

Safer and Better than Banking—Buy one acre or more of my richest fruit, berry and poultry lands, improved or unimproved, on terms. Owner will guarantee to take it back, pay you 6 per cent interest on purchase price if you are dissatisfied. Sonoma county is the banner county. Electric cars, rural telephone, rural mail delivery, all modern conveniences, close in property. No agents. Write **Owner, Box 207, Petaluma, Calif.**

Irrigated Farms—In the South San Joaquin Irrigation District, which comprises 71,000 acres; ditch on every forty acres; best sandy loam soil in the State; no hardpan, no alkali, no overflow; we have for sale large and small tracts, improved and unimproved; orchards, alfalfa and dairy ranches; easy terms; let us know your wants. **Ripon Nursery & Improvement Co., Ripon, Calif.**

10 acres ½ mile west Clovis, highly improved to vines, peaches, berries, cheap; good terms. Best water right, ditch and pumping plant, good eight room house, fine lawn, flowers, 2 chickens, tools. Buy from owner, save commission. Address **Box 75, Clovis, Cal.**

1,000,000 People Could Be Made Happy on well-located, fertile farms, which they could buy for almost nothing in sizes to suit. The State of California sells the land for 1-10 to 1-100 of its value. **Our Free Booklet** tells how; send for it now. **California State Land Information Bureau, Sacramento, Cal.**

5 Cents an Acre Cash—Texas school land for sale by the State. You can buy good land for $2 per acre; pay 5 cents per acre cash and no more for 4 years, but 3 per cent interest. Send 4 cents postage for further information. **Publishing Co., Dept. 88, San Antonio, Tex.**

Why not buy overlooked bargains direct from officials? Only a few investigating. Land is safe and sure. Will you write for FREE circulars? Some valuable land overlooked near you that YOU can now buy regardless present value. **The California STATE Land Information Bureau, Sacramento.**

For Sale—105 Acres Good Apple land, about 80 acres with oats; spring water, lots of wood; climate coolest in summer and warmest in winter; water and railroad transportation. Price $4,500; only $1,500 cash. **A. Urquidi, Fort Bragg, Cal. Box 494.**

90 acres in Santa Clara valley—Well improved general ranch; one hour from San Francisco; $300 per acre; no exchange; no agents. **Box 155, Mayfield, Cal.**

The Weekly Advance gives items from all parts of the State—tells of resources, development, etc. Good for home seekers. 25 weeks, 25c. Address to-day, **Advance, Escondido, Cal.**

We specialize in Palo Alto residence orchard homes and acreage in neighborhood of Stanford University. Correspondence invited. **Hyslee & Slorum, Palo Alto, Cal.**

For Sale—Two acres rich, sandy loam, half mile from Petaluma; greatest business city West. **Mrs. A. Zeh, Gossage Road, Box 32, Petaluma, Cal.**

320-acre grain farm in best wheat growing section Southern Alberta for sale cheap. Apply to owner, **T. A. Bryant, Lake Macgregor, Alberta.**

One Dollar an Acre—Good homestead land, from 40 to 320 acres. For particulars address **Box 224, Dorris, Cal.**

For Sale—Villa sites on the Blue Lakes. Address **G. A. Behrnd, Midlake, P. O. Cal.**

THE FARMER'S MARKET PLACE

REAL ESTATE WANTED

rms Wanted—We have direct buyers; don't pay commissions; write, describing property, naming lowest price. We help buyers locate desirable property free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

nted—Farms from owners for sale. We have direct buyers. Send description. Magazine, particulars, free. **Western Sales Agency, Minneapolis, Minn.**

nted to hear of good farm or unimproved land for sale. Send description and price. **Northwestern Business Agency, Minneapolis, Minn.**

r Expert System can sell your property. We save all buyers time and money. **National Sales Agency, Portland, Oregon.**

TREES

,000 Sour and Sweet Stock, 12 to 36 inches, raised 2 to 6 in. apart; 50,000 budded trees. Will take land. Now is the time to plant. **Butler's Morning Glory Nursery, Lamanda Park, Cal., P. O. Box 145.**

r sale—Grafted Washington Navel orange trees, from ½ inch to ⅝ inch diameter; will make special price for over 500. Call **I. Shoda, 230 M St., Sacramento.**

e Malgoba Mango—A grafted East India fiberless Mango. Good sized trees. Well established. Boxed. Also budding Mangoes in pots. Write **A. A. Quint, R. F. D. No. 2, Pasadena, Cal.**

rida Sour Orange Stock, 1 to 3 feet tall; exceptionally fine; $12.50 per thousand. **Arnold Nurseries, 711 East White Oak, Monrovia, Cal.**

nge Trees—First-class navels and Valencias, one-half inch and over in diameter, 50c each or $4.75 per thousand. **A. G. Wright, Fullerton, Cal.**

r Sale—Four thousand Washington Naval orange trees, 40c, ¾ to 1½ in. **O. B. Charter Oak, Cal. Morris Citrus Nurseries, San Dimas, Cal.**

rus Nurseries, Murphy Oil Company, East Whittier, California. Selected stock for sale; inspection invited.

00 Avocado Seedlings in pots, also large seedlings. Write **A. A. Quint, R. F. D. 2, Pasadena, Cal.**

0 orange trees for sale. **A. C. Blayney, Fowler, Cal.**

RABBITS

nott Strain of Pedigreed Belgian Hares—Big money makers. Start small and grow big. Write **Hare and Rabbit Yards, Trinity street, Fresno, Calif.**

r rabbits won 26 prizes at San Francisco and Los Angeles shows. Catalogue free. **Caldwell Bros., Los Angeles, Cal., box 612.**

gh-grade flemish giants. Cobrook Rabbit Company. P. O. box 354, San Jose, Cal.

EDUCATIONAL

n der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

PHEASANTS

oklet, "How I Raise Pheasants," 20c. Prices free. **H. W. Myers, Tacoma, Wash.**

SEEDS, PLANTS, ETC.

Rhubard Plants—Burbank's Crimson Winter Rhubarb and Wagner's Improved Giant Crimson Winter.

I am now subdividing and replanting and have more plants than I have land for, so am selling at the very low price of 75c per dozen plants for Burbank's; $1.00 per dozen for Wagner's.

Every home garden should have a few dozen of these splendid plants.

Remit by postoffice or express money order or bank draft to **Reginald Bland, San Luis Rey, San Diego Co., Cal.,** stating variety and quantity desired. Orders filled immediately on receipt.

If you want to plant for market, write me for special prices and terms for orders of 1,000 or over.

Full cultural directions with each shipment.

Don't delay! Now is the time to plant for fall and winter picking!

BURBANK'S SPINELESS CACTUS. For cattle, hogs and poultry; green feed all the year; secure the new Burbank Forage and Fruiting varieties; send for catalogue and price list. **J. I. Jewell, Santa Rosa, Cal.**

Spineless Cactus—Burbank's latest and best varieties, both for forage and fruit. Send for catalogue and price list. **G. D. Cummings, Los Altos, Cal.**

Spineless Cactus—Be sure you get Burbank's "Santa Rosa" when buying cactus and save disappointment. **Haydon's Nursery, San Juan Bautista, Cal.**

Maltese, Sicilian and Spanish spineless cactus. For particulars apply to producer. **C. M. Johnston, 8703 A st., cor. 87th ave., Oakland.**

Sour Orange Seed and Seedlings, 30,000 Eureka Lemons, 50c. Otis E. Hyde, 63 North Meredith ave., Pasadena, Cal.

Spineless Cactus—Best by test. Compare prices, etc. Write **J. L. Lawson, San Jose, Calif.**

Clean Vetch Seed, $2.75 per hundred. **Murphy's Seed Store, Albany, Ore.**

SITUATIONS WANTED

Farmer, experienced, practical worker in handling men, live stock, dairy, hogs, grain, alfalfa, beets, potatoes; a thorough theoretical knowledge of farming; 10 years experience as manager, desires opportunity. Address **Max P. Schorer, 509 North street, Woodland, Cal.**

Orchardist and Farmer with wide experience is open for position as ranch manager or foreman. Address **Box 27, Route 4, Sebastopol, Sonoma Co.**

PATENT ATTORNEYS

Dewey, Strong & Co. (Est. 1866)—Patents, trademarks, inventors' guide, 100 mech. movements free. **911-916 Crocker bldg., San Francisco.**

DOGS

For Sale—Thoroughbred Llewellyn setter puppies, fine hunting dogs, $2.50 cash, females only; will ship to you. **Anton Weber, Calabasas, Cal.**

Wanted—To buy thoroughbred deer or fox hound male pup. **Warren Swayne, Tilden, California.**

BEES AND HONEY

For Sale—Italian bees. For prices address **Mr. Tainter, Corte Madera, Cal.**

Some Additional Crop Reports

(The following reports on crop conditions in counties named were received from the county horticultural commissioners too late to find a place on pages 13 and 14.—Editor.)

HUMBOLDT, George B. Weatherby—Apple prospects are fine at the present time, and it looks as if there would be a heavy setting of fruit. The weather conditions have been ideal. Strawberries will soon be in the markets, and prospects are for a bumper yield. All livestock are reported as being in good condition.

LAKE, George A. Lyon—The following forecast shows the situation as it appears at present: Apples, pears and almonds, I think, are safe for the percentage given, but prunes and grapes are uncertain. With grapes there is still danger of frost. Prune trees are well set with fruit, but the growth is very short, and I look for a heavy drop. Apples indicate a 100 per cent crop; pears, 65 per cent; prunes, 100 per cent; almonds, 100 per cent, and wine grapes, 100 per cent.

SACRAMENTO, Howard G. Kercheval—Peaches promise 90 per cent of a normal crop; apricots, 90 per cent; pears, 75 per cent; cherries, 85 per cent; prunes, 20 per cent; almonds, 30 per cent; grapes, 100 per cent; plums, 80 per cent. Citrus fruits and grapes are both blooming heavily. Strawberries will give a very heavy yield; picking is going on now. Vegetables will also give a very heavy yield; the potato crop is very well advanced. Grain is heading out fine. There will be a heavy threshing of barley and wheat this year. The great amount of pasturage has kept all stock in fine condition. Cherries and strawberries are going forward very fast.

SAN JOAQUIN, William Garden—Almonds promise 50 per cent of a full crop; apples, 100 per cen ; apricots, 75 per cent; peaches of all varieties, 100 per cent; plums, 100 per cent; prunes, 50 per cent.

The surprising feature of the reports is the almost universal shortage of prunes, despite the apparent excellent climatic conditions. The great prune county of Santa Clara seems to have a very short crop from all accounts, though not reported above, and similar conditions seem to have developed in every part of the State where prunes are grown very much, except in the north of bay counties, where the crop is not up to the highest standard. This is in the face of the fact that other fruit crops are bearing in quite satisfactory fashion. Then pears, which are usually very reliable producers, are generally running somewhat short also.

Mixing Salt With the Hay

The need of livestock for salt is so well recognized that a good proportion of stock men keep some salt where animals can get at it at all times. A still better idea is to add salt to the hay when stacking it so that the animals will have it as a part of the food, not merely as a tonic, as when a lump of rock salt is kept before them.

About 20 pounds of salt should be added to a ton of hay. After three feet of hay is stacked the salt should be sprinkled by hand over the surface and another three feet of hay put on top until stacking is completed

Besides being a fine thing for the stock, salt has added advantages. It more than pays for itself in additional weight. It likewise draws moisture to make still more weight and prevents spontaneous combustion. With salt in the hay, it is also less liable to must. Then, when the animals eat salted hay, they clean it up better than ordinary hay, eliminating waste and giving a higher feeding value per ton.

130 PAGES OF LUMBER BARGAINS

Everything needed in building or rebuilding a home—any article from the front gate to the rear fence—and a price direct to you that will save you money on every item you buy. We make and sell only new goods, guaranteed to be as represented—no wreckage; no odds and ends. Here are some money saving prices from our new 130-page catalogue:

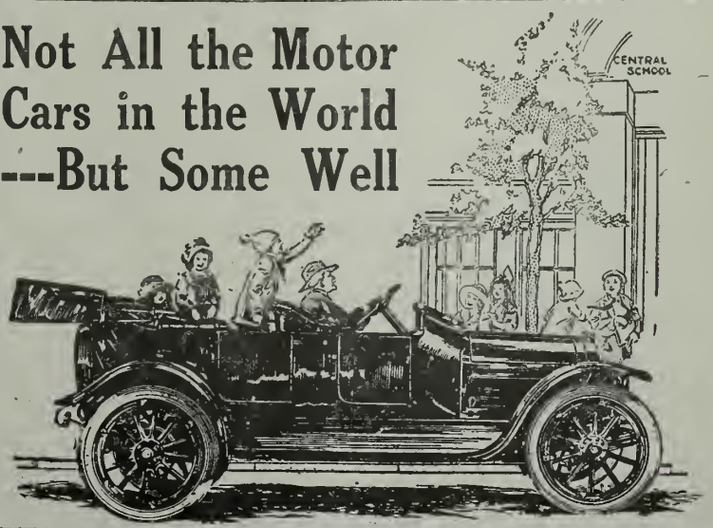
8x10 8-lt. windows, glazed	$0.80
2 ft. 4 in. x 4 ft. 6 in. windows, 2 lt., glazed	1.40
2 ft. 8 in. x 6 ft. 8 in. 1¾ Oregon Pine doors	1.50
Sash Door, 2 ft. 6 in.x6 ft., 1¾ Oregon Pine, like cut, glazed	2.65
Window Glass, 8x10	.05
Window Glass, 24x28	.40
Roofing, best 2-ply composition, per sq	1.50

There are hundreds of others. If you want the full value of every dollar you pay for Sash, Doors, Glass, Paints, Varnishes, Hardware, Building Paper and Roofing, tell us to send the catalogue. Address

CONTRACTORS AND BUILDERS' SUPPLY CO. Inc.

Corner Fifth and Cypress Sts., Oakland, Cal.

Not All the Motor Cars in the World ---But Some Well



THE manufacturing policy of Elmer and Edgar Apperson—it means much to the buyer in comfort, confidence and cash. More keenly each day Apperson owners appreciate the power, speed, wear-resistance, and low-upkeep of the

APPERSON "JACK RABBIT"

"The Wizard of the Hills."

Our production is limited. Never will it reach that point where **quality** suffers...Never will the "Jack Rabbit" lose its distinctiveness. **Quantity** can be had for the asking. **Quality** only by the stiffest effort intelligently applied.

The work of an entire "Know How" organization is centered on the production of a relatively small number of **manufactured** cars. Each one, before it is delivered, passes test after test—by department foremen, final inspectors, superintendents—and last receives the personal inspection and O. K. of either Elmer or Edgar Apperson. No detail escapes them. Such personal attention from two of the best engineers the industry has known would be manifestly impossible were our output "mammoth," "stupendous" or "so many per minute." You know that.

Become acquainted to-day with the New "Forty-Five"—the twenty-first year tribute to the unerring motor car genius and instinct of Elmer Apperson. Personally, if possible—if not through the medium of our De Luxe Catalogue.

Prices—Based on a profit of 9%.
Including full equipment, with positive electric lighting and self-starting system.

Light 4-45	$1,600 - 5 Pass. Touring	Light 6-45-58	$2,200 - 5 Pass. Touring
Light 4-45	1,600 - 2 Pass. Roadster	Light 6-45-58	2,200 - 2 Pass. Roadster
Standard 4-45	1,785 - 5 Pass. Touring	Light 6-45-58	2,300 - 7 Pass. Touring

Apperson Bros. Automobile Co., 305 Main St., Kokomo, Ind.

APPERSON DISTRIBUTORS IN CALIFORNIA

Los Angeles, The Leon T. Shettler Co.
San Francisco, Myers Motor Car Co.

Irrigation and Poultry Success

By Chas. Weeks, Palo Alto

IN this State of California it is absolutely necessary to have irrigation on an egg farm in order to secure any measure of success.

Therefore, when choosing a location for an egg farm, be sure that there is plenty of good water beneath to supply a modern centrifugal pump that must throw at least four to five hundred gallons per minute, for it takes this amount of water to produce green feed in paying quantities.

Don't make the mistake of installing too small a pumping plant. In time a small stream of water eats up more wages in spreading than the difference in price between a large and a small pump. With a six or eight inch stream of water fresh, succulent, green feed is insured the year around and without green feed in abundance no egg farm can exist for very long. So many buy cheap, unproductive, non-irrigated land on which to run poultry and invariably fail. Level, fertile, irrigated land is the first essential in establishing an egg farm. With plenty of water at command two alfalfa yards to each flock can be kept flourishing and the fowls alternated from one to the other as the green grows.

We run our laying hens in flocks of 1,000 in houses 120 feet long and 20 feet wide, with open front to the east, with partitions every 20 feet extending 12 feet from back toward front, leaving an 8-foot alleyway next the open front. In front or on the east side of this house are two yards each 40x60 feet, with middle fence extending from middle point of house, at which point is the water trough from which hens can drink from either yard or from inside the house. This trough is elevated so that hens cannot scratch litter into water. By opening the doors at either end of the house the hens can be shifted from one yard to the other. This sized yard is an economical space for egg production and insures fresh ground by growing a crop of green each month. Well watered alfalfa in these yards absorbs the poison that accumulates and keeps yards pure.

Hens do not want a large range for best egg production, but what range they have must be kept in ideal condition to get best results.

The brooder yards should also be double and yards irrigated and chicks alternated, thus insuring clean, fresh yards for the young stock, which is absolutely essential.

We sow all of our yards to alfalfa, which should be started at least six months before fowls are turned on it. It is better to level and plot the ground and sow the alfalfa and have it well along and then build houses and yards afterward. Each yard 40 by 60, or whatever size is used, should be leveled and banked around outer edge and flooded at least once per month. This insures a vigorous growth and fresh soil for the hens to scratch in. It is almost beyond belief as to the production of these well watered and fertilized yards, protected as they are by the long house.

For least trouble and best results an underground irrigating pipe system with large gates at each yard is ideal. The first cost is more than made up by labor saving in following years.

After the hens have eaten down the crop of alfalfa in one yard they are transferred to the other by simply opening the gates and closing those in yard vacated. Then we cultivate yard vacated with fine-tooth cultivator and sow some barley, which grows with the next crop of alfalfa and makes one of the finest green feeds for hens and balances the alfalfa.

With houses kept thoroughly disinfected and hens running on these fresh, green yards we seldom have a sick hen and the health of the entire flock is remarked by all visitors.

Besides the barley and alfalfa growing in the yards we have both kale and beets growing in abundance on other ground, which is also plotted for irrigation and heavily fertilized. The kale is run through the cutter and beets through the shredder and feed in the long feed troughs extending full length of each house. With shredded beets and beet tops and kale and alfalfa and green barley before the hens every day, it is no wonder they lay and lay and keep on laying and never get fat and diseased as on too much grain. Chicks from two-year-old hens with these environments are good as gold. They grow and grow and inherit the green-eating tendency and make vigorous frames for heavy egg production.

If you are thinking of entering the poultry business, take my advice and secure an irrigated ranch to start on. I failed on a non-irrigated ranch and have made good on this irrigated ranch beyond my wildest dreams. If you have a poultry ranch already and not an abundance of water for green feed sell out at once. It is next to impossible to make it pay without water. Get where you can raise greens and the first essential is secured.

(The above is the first of a series of articles upon poultry raising by Chas. Weeks of Palo Alto which will appear in succeeding issues of "Orchard and Farm." Most of our readers probably already know that Mr. Weeks is one of the most successful poultry men of California. As he started in without experience, he realizes the problems that the beginner has to meet in a way that a poultryman who was born into the business will not appreciate. This combined with his success gives what he has to say a high value to all readers and "Orchard and Farm" has been extremely fortunate in securing his services. The above article will indicate this.—Editor.)

Another Big Egg Record

I notice in your paper articles about large eggs. I bought 12 pullets from a poultry ranch at the foot of Mt. Shasta, 700 miles from here. They are not a year old and came right off the snow, and ice on the cars Monday, Tuesday and Wednesday until noon. When they arrived it was up to 96 in the shade. I put them in a box stall and that afternoon they laid four eggs, five the next day and 30 the first week; 55 the second week; 56 the third week, and 55 the fourth week, and the next three days I got 21, making for the month 217 eggs. I am not a chicken man and would like to know if that would be a good yield for one month considering what they went through. —WM. SINNOCK, Santa Ana.

The performance is excellent considering the circumstances and indicates fine birds, for very often even a slight disturbance is likely to injure egg production for some time, and apparently a long three-day trip and a radical change in surroundings did not greatly affect these fowls. During the month these pullets seem to have laid a little over 58 per cent, which would be considered on many poultry ranches quite satisfactory when the fowls were about at their best. It is still below what can reasonably be expected for a good portion of the year on a well managed egg plant, but it could rarely be expected by fowls right after such a long journey.

GRAIN BAGS
TWINE
IRRIGATION HOSE
TENTS
WAGON COVERS---CANVAS
DESERT BRAND { WATER BAGS
MILK and BUTTER COOLER
Write for Catalog and Discounts.
W. A. PLUMMER MFG. CO
37 FRONT ST.----CORNER PINE----SAN FRANCISC

Regal Renstrom
UNDERSLUNG
"Can't Turn Turtle"
$1,225
F. O. B. SAN FRANCISCC
The safety of Regal cars and the possibilities of driving th car over all kinds and conditions of roads make the Regal th ideal car for country work.
Write for details and specifications.
SUPPLIES, VULCANIZING, REPAIRING. Everything for the motor ca
Frank O. Renstrom Co.
VAN NESS AND GOLDEN GATE, S. F. Dealers Wante

WORTHINGTON
Irrigating Machinery
Our name has stood for hig est quality machinery since 185
Pumps and Engine
Complete plants installed, ele trically or gas engine driven. Pum are water balanced and are for belt or direct connection.
SIZES CARRIED IN STOCK
Pumps, 1-inch to 12-inch.
Engines, 1½ H. P. to 40 H. P.
Our 80-page finely printed and illustrated Bulletin of Irrigati Number O. F. should be read by every irrigationist. It is the only co plete book of its kind. Sent without cost on request.
Henry R. Worthington, 306-308 Sharon Buildin
San Francisco

Poultry in the Imperial Valley

IKE other things, poultry production in the Imperial valley is a v y simple sort of a proposition, as t accompanying illustration of a t roughly satisfactory hen house is c cerned. In fact, this photo was

A Thoroughly Satisfactory Poultry House at Calexico.

t en on the ranch of Fritz Kloke, C exico, where all equipment is kept u to the highest standard.

There are no fogs, little rain and l le cold weather, so that there is h dly any reason for providing more t n the simplest shelter and houses t t are very simple and open are lots c aner and healthier than closed h ses, which counts for a great deal. T e hens want shade, and a roof on s ts and composed of brush and s w gives all the shade that is re- q red. They also need roosts, so a f roosts up near the roof make t m feel housed in the highest lux- u . Hens also want a dark place to l , and building a frame work under t s shelter and off the ground a few f t, letting some sacking hang down i front to give a sense of privacy, g es the best sort of accommodations. T e point will be kept in mind that s h primitive equipment is not pro- v ed through economy or indifferc e, but because it is the cleanest a most thoroughly satisfactory f m the standpoint of the hens that c ld be, as well as being very cheap.

A great deal of Milo maize is s ed in the valley. This is fed in t heads. Alfalfa is everywhere to p vide green feed and the combina- t n is excellent, from the food s ndpoint as well as in giving green s ff all the year round. There are s stones in the valley and the ground u ally is very heavy, and some grit i s often to be purchased. Otherwise p ltry raising is easy and inexpen- s e. In spite of the fact poultry p ducts are comparatively small and l al demand is bigger than the sup- y most of the time.

Turkey raising is particularly good i the Imperial valley. The turkey is h hardy enough bird, but the poults c not stand dampness. On account o the extreme dryness of the atmos- p ere a high percentage of the hatch l es and matures. The alfalfa worm i very troublesome in the valley and t turkeys get good feed and do a p blic service by consuming a great m ny worms, living off the alfalfa o herwise, perhaps with a little Milo t make them feel at home. They can p st on trees or fences around the t m buildings. Loss from wild ani- m ls is practically nothing, as the l y place wild life can exist outside t the two "river" bottoms leading to the Salton Sea, is on farmed land.

Up to a year or so ago a person could usually keep turkeys and let them forage for themselves, but since things have approached a permanent running basis and ranchers can attend to the loose ends of things, they are beginning to feel that if anybody's turkeys are to be raised on their alfalfa it might as well be theirs, and when a person wants to raise turkeys he has to provide the range for them, simply as an incident to regular farm routine.

D. J. W.

Chickens Enjoy Silage

Cows and sheep thrive on silage; it is a little too bulky for hogs to eat a great deal; horses and mules eat small amounts with profit, and a writer to "Hoard's Dairyman" tells that it is the best ever for poultry. He states: "We have tried it for two years and find the birds are crazy for it and will clean up all given them. Of course, we give a grain ration, oyster shells, grit, etc., besides the ensilage." Since poultry require some green food in order to do very well and lay best when they enjoy their food best, it can be seen that ensilage will help a great deal to keep the egg production up to standard, as well as stimulating the milk flow of dairy cows or putting beef on steers and mutton on sheep.

The Best of Birds

Let the others raise their ditties to the sparrows in the cities,
Let them prate about the peacock if they will;
Let them talk about the robin or the mournin' dove a-sobbin',
Or the blackbird as it whistles on the Hill;
Let them sing about the jay bird, givin' praises unto that gay bird;
Let them boast about the linnet or the wren;
But I'm proud to say my charmer is the comfort of the farmer,
And I'll raise my little ditty to the hen.

If you're only out for beauty, it is probably your duty
To descant upon the bulbul in the tree;
Or, if wisdom's what you're after, then the owl upon the rafter
Quite the true and proper caper's said to be;
But it's usefulness I'm praisin', and my ditty I am raisin'
To the best and truest feathered friend of men;
And so here's to that great blessin', may her shadow never lessen,
Just the humble and hard-workin' barnyard hen!

Forkner Orchard Cultivator

Does more work with less draft and leaves a better surface mulch than any other cultivator made.

It Works Right Up To Your Trees

Cultivating the entire surface beneath low branches without disturbing boughs or fruit. Write for catalogue and free book "Modern Orchard Tillage."

LIGHT DRAFT HARROW CO., 603 Nevada Street, Marshalltown, Iowa

FREE

This Handsome 14K

Gold Plated "Bull" Watch Charm

To Every Man Sending 5c for a Sack of "Bull" Durham Tobacco

This Watch Charm is unusually attractive in appearance and design. It is *14K gold plated*, and will prove a decided ornament to any Watch Fob or Watch Chain. We are making this unusual Free Offer in order to induce more smokers to try "rolling their own" fresh, fragrant, hand-made cigarettes from world famous

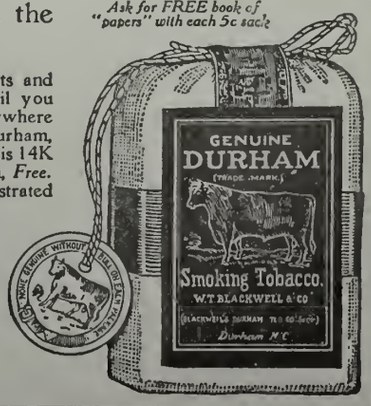
GENUINE
"BULL" DURHAM
SMOKING TOBACCO

(Enough for forty hand-made cigarettes in each 5-cent sack)

As many cigarettes are rolled with "Bull" Durham in a year as *all* brands of ready-made cigarettes in this country combined. There is a unique, delightful aroma to "Bull" Durham that is not found in any other tobacco. It is produced by an exclusive process, known only to the makers of "Bull" Durham.

Once you have learned this delicious, distinctive flavor, your taste will always call for it, and you will always recognize "Bull" Durham anywhere by its savory aroma. There is nothing else like it in the world.

Ask for FREE book of "papers" with each 5c sack



FREE Send 5 cents and we will mail you prepaid, anywhere in U. S., a 5-cent sack of "Bull" Durham, a Book of cigarette papers, and this 14K gold plated "Bull" Watch Charm, *Free*. We will also send you an illustrated booklet showing how to "roll your own" cigarettes with "Bull" Durham tobacco. In writing, please mention name and address of your tobacco dealer. Address "Bull" Durham, Durham, N. C. Room 1100

THE AMERICAN TOBACCO COMPANY

Search for the Biggest Eggs

THE search for the biggest egg laid seems to have ended unless some hen will hurry up and outdo anything that has gone before, or unless some previous big performance will be recollected. In the April issue a Tulare county hen was told of which had produced an egg 9 1-16 inches around ends, 6¾ inches around the middle and weighing 6½ ounces.

A Marysville hen comes pretty near this with an egg laid by a Buff Orpington pullet owned by Mrs. H. McDaniel, on March 16th, 1914, weighing 6¼ ounces. This was reported to Orchard and Farm by G. W. Harney, county horticultural commissioner, who states that the length of the egg is 3⅞ inches, circumference around middle 7¾ inches and circumference around ends 8⅜ inches. It can be seen that the Tulare county egg was slightly longer, or about 11-16 inches more in circumference around the ends, but that the Marysville egg was a full inch greater in circumference around the middle. According to measurement this would appear to make the Marysville egg the larger, or at least it would occupy more space, and in the "show down," if the shell was the standard of competition, as it would have to be before the egg were very old, the Marysville egg would walk off with the honors.

There is also word of a considerable poultry achievement from El Dorado county. The eggs were smaller, but they came quicker. Calhoun Foster of Placerville writes: "During the month of December, 1913, on two consecutive days in gathering the eggs from my flock of Buff Leghorns I found large eggs, the first measuring 6 by 7 inches and weighing 4 ounces, and the second 5¾ by 7¼ inches and weighing 3 ounces. They were both double yolked. I may add that the smallest egg for the season by the same flock was 3 9-16 by 3 inches."

Now, unless we get word of a larger egg than any reported yet, we will have to state that the biggest egg on record was laid in either Marysville, or Poplar, Tulare county (readers can decide which wins), and anybody who knows of a larger egg or hereafter finds that a larger egg has been laid by a real hen is urged to report same so that due credit may be given.

Since the above was written an actual demonstration of the fact of big eggs being laid was received in the form of an Easter present from Otto Krebel, Napa. At least, eggs are supposed to be an appropriate present for Easter and two whoppers were sent in a tin box by parcel post. But alas for the prospects of selling eggs by parcel post with our present postal machinery! One of them was as it came from the egg factory, the other was an omelet in the making and weight and size could merely be matters of conjecture. If it was the larger egg, we will have to rely on Mr. Krebel for information regarding weight and measurements.

The other egg weighed 4 ounces and measured 6¾ inches by one circumference and 7½ the other. An egg like that in the middle of winter, according to the alleged humorists, would be a fortune by itself.

New Breed of Poultry

Although the recognized breeds of poultry are almost numbered by the score, it seems that another breed, the Rhinelander, is in the field, a few having been brought to California by Mr. August Schwarz, 1214 Geary street, San Francisco, these being the first coming to America.

This breed is derived from the common fowl of a certain section of Germany, much like the Hamburg in many ways, but very much larger and having the great egg laying capacity of the former. The possibilities of these fowls were recognized some time ago and systematic efforts undertaken to standardize the breed, a gentleman in Germany who is a friend of Mr. Schwarz, taking the lead in the work. It is the improved fowl that is given the name of Rhinelander. The fowls are large, being excellent for table use, as well as for egg production. The cock weighs on an average of seven pounds, while the hens reach six pounds. An important feature for California is that the hens lay white eggs.

Mr. Schwarz sent to Europe for twenty hens and entered them in the international egg-laying contest being held at Mountain Grove, Mo., but unfortunately the vessel upon which they crossed the Atlantic met some severe weather and five of the hens died of exposure. The two pens he expected to enter at the contest were both short, which made it impossible for them to compete successfully, though the egg-laying capacity is shown by the fact that T. E. Quisenberry, superintendent of the contest, writes: "You may be interested to know that one of your hens is the leading hen in the egg-laying contest at the present time."

Mr. Schwarz is having hatched all fertile eggs secured from these pens, in order to secure a fair-sized flock, and will enter several pens in the egg-laying contest at the Panama-Pacific International Exposition next year, challenging the world to a friendly issue.

Sprinkling Hatching Eggs

If in doubt as to the moisture content of the air or if it seems to incline toward dryness, or if the germs are weak and die in the shell before hatching, or stick to it, while hatching, use moisture. It is safer to give too much moisture than not enough. It has been said that the normal moisture of the atmosphere is, as a rule, sufficient for the hatching of eggs in incubators during the early part of the year, but this is not always nor generally the case.

The Maine experiment station says that "except possibly in a rather wet season this is not the case." The experience at the station indicates that "in ordinary seasons if no artificial moisture is supplied to the incubators there is too great an evaporation from the eggs. It is demonstrable that many eggs fail to hatch because of this dryness of the air in the incubator. In the station's experience better hatches have been obtained when moisture beyond that normal in the atmosphere is supplied during incubation.

"The most satisfactory way to supply this extra moisture in machines where sand trays are not an integral part has been found to be by sprinkling the eggs with warm water twice a day. The water is warmed to a temperature of from 104 to 108 degrees. The sprinkling may be done either with a small hand sprayer or by simply shaking the water on with the hand or with a whisk broom. This is done in connection with regular manipulation of the eggs (cooling and turning) during the incubation. The application of moisture is begun as soon as the eggs go into the machine and is continued until the eighteenth day. Since adopting this procedure a very considerable reduction in the mortality of chicks in the shell has been effected."

If you can't set your hens on the ground, put a square of sod in the nest and moisten it occasionally.

Poultry Experiments

As a result of feeding experiments conducted at the Missouri station it was concluded that whole grain does not fatten chickens; that it is cheaper to feed the grain finely ground; and that the best gains can be had by feeding birds finely ground feeds when confined in crates. In feeding experiments with 3 different fattening rations composed of various amounts of corn meal, the gains made were in proportion to the amount of corn in the ration. The best returns resulted from a ration consisting of 24 parts white bolted corn meal, 6 parts low grade flour, and 1 part each of oatmeal, pea meal, buckwheat middlings and wheat middlings. The flesh of the birds fed on this ration was creamy white in color, the fat was distributed over the body, and the entrails were encased with fat.

The music of the singing hen evidently is more soothing than phonographic records to a Manhattan man who advertises: "Will trade talking machine and eighty records for a bunch of good chickens."

Beef scrap gets more eggs than red pepper and doesn't hurt the hens.

The hen that lays lots of eggs needs lots of grit and oyster shell.

The Vermorel Sulphur Spraying Machine

The Most Effective Machine Ever Made For Grape Vine Spraying

The following extract from a testimonial speaks louder than a hundred arguments:

"In reply to your favor of October 12th, regarding our tests of the Vermorel Torpille Sulphur Machine, I will say that it has given us very good results. We have been able by means of this machine to sulphur the vines in the most satisfactory manner with a much smaller amount of sulphur than with any other machine we have tested.

(Signed) FRED T. BIOLETTI,
Professor, University of California, Berkeley.

Write now for literature and testimonials about this spray.

The H. C. Shaw Company
Wholesale Distributers
52 N. California St., Stockton, California

"Gleanings in Bee Culture" Special Offer—3 months 10c
Just to introduce this invaluable 64-page bee magazine to you, and to prove that Bees make orchards pay better, we make this Special Trial offer for a limited time. You will find it full of invaluable information about bee keeping. We will send our book, "Bee Supplies," with it Free. Send coin in envelope at our risk.
THE A. I. ROOT CO., Box F, Medina, Ohio
San Francisco Office, 58 Sutter Street

Protect Your Chicks

White Diarrhoea is fatal and very contagious. It attacks chicks the first five weeks and kills 60 to 75 per cent of all chicks hatched. May wipe out your whole hatch. Save your chicks by putting in their drinking water

CONKEY'S White Diarrhoea Remedy

Chicks drink freely and doctor themselves. Don't take chances on losing your whole hatch. Keep Conkey's White Diarrhoea Remedy on hand as an effective treatment and preventive measure. Prices 25c and 50c.

Lice Eat Poultry Profits

Lice are responsible for many poultry diseases, poor egg records and great loss of profits. You can get rid of them quickly by dusting your fowls with

Conkey's Lice Powder

A combination of effective lice killing ingredients. Use it on setting hens now, because it Kills the Lice—Doesn't harm Chicks. Price—15 oz., 25c, 48 oz., 50c.

Spray your poultry house and paint the roosts with

Conkey's Lice Liquid.

Thoroughly wipes out these pests that prey on your chickens at night. Qt., 35c; Half Gal., 60c; Gal., $1.00.

Guard your chicks against the deadly head lice.

Conkey's Head Lice Ointment

Kills them every time—doesn't harm chicks. 10c and 25c.

MONEY BACK IF NOT SATISFIED

Ask for Conkey's Practical Poultry Book—IT'S FREE

If your dealer cannot supply you, write direct to
THE G. E. CONKEY CO., CLEVELAND, OHIO

OUR Baby Chicks MAKE Heavy Winter Layers

Chicks from a S. C. white leghorn strain we have been working up for 20 years. Write to-day (a postal card will do) for our special low prices for the next three months. These chicks will make heavy winter layers.

S. C. WHITE LEGHORN BABY CHICKS

Write to-day and get chicks for winter laying and excellent profits.

THE BIHN HATCHERY PETALUMA, CAL.

Largest in the World—Capacity 165,000 Chicks.

Programme for Farm Improvement

farming in California and elsewhere is to come to its own and rm life develop its fullest advanges, the farmers will have to get gether more, smooth out by organation many of the troubles and difculties before them, obtain better cial conditions and accomplish any tasks with less friction than ow is necessary.

In Arizona there has been formed e Arizona Farm Improvement Asciation, which has a purpose and outline of action that it does one ood to consider. How it will work it remains to be seen, but the idea expressed is inspiring. The proram in part has been given as folws by the Arizona Agricultural Exriment Station.

Increasing Membership—We must crease our membership as rapidly possible. All members of other gricultural organizations should join . Where a community has no farms' organization of any kind, it is ell to start by securing members for e A. F. I. A. Eventually a local rm improvement association may formed, using our constitution and y-laws as a model. It is expected at no member will try to get in eople who will not make good mems. Do not forget to invite the dies and the children, especially r the local associations. Special erature on organization methods ill be prepared for distribution.

Farmers' Institutes—One purpose this association is to insure large, thusiastic audiences at our farms' meetings. If each member will otify all his friends and see to it at two or three of his neighbors atnd the institute with him, we shall rely have big crowds.

Seed Exchange—Every member ho has pure-bred home-grown farm eds for sale should list them with e secretary, stating kind and vaety, germination test, how much on nd to sell, price wanted per pound; sample should be sent to the secrery. Members wanting good accliated seed should write to the sectary stating just what they need.

Livestock Exchange — Pure-bred vestock (including poultry) may be sted and exchanged the same as eds.

Farm Help Wanted — Members ishing to employ farm hands should gister their wants with the secrery, stating their requirements as to nd of work, length of employment, ages paid, etc. The Experiment Station has frequent applications for employment on farms and the secretary will list these applications together with particulars regarding applicants

Finding a Market—Arizona has some special agricultural products such as tepary bean, long staple cotton, etc., for which there is not yet an established market. By means of newspaper publicity, co-operation with the office of markets, U. S. Department of Agriculture, and other methods we hope to standardize these products and create a steady market for them.

Grading Farm Products—At present Arizona alfalfa hay has a bad reputation because it is not graded, and frequently contains Johnson grass and other objectionable trash. The National Hay Association has established six standard grades of alfalfa hay which this association should adopt. Specifications for these grades and instructions for grading should then be put in the hands of every member interested. In fact the A. F. I. A. should endeavor to interest every alfalfa hay raiser in the State in grading his hay so that it will command a better price in outside markets.

Boys' and Girls' Clubs—Literature is being prepared to assist local school principals, teachers, ministers, etc., in organizing boys' and girls' clubs. These clubs will take the form of corn clubs, cotton clubs, grain sorghum clubs, etc. Members for these clubs will compete for State, district and local prizes which will be donated by various organizations and individuals Every member should see that a club of this sort is started in his locality. Ask the secretary for literature on this subject.

Cow-Testing Associations—An effort should be made to form some cow-testing associations in the principal dairying sections.

Co-operative Experiments — We shall try to start a few co-operative experiments with various members this year. These will be largely to determine best cultural practice and irrigation methods for certain crops. Any member who is interested should write the secretary for further information.

Farm Management Survey — The secretary is going to send out blanks to every member in order to secure data concerning farming as a business in Arizona. Please fill out these blanks with great care, since the information thus secured will be of great value to all.

Distribution of Seeds and Plants—A few seeds and plants may be distributed to members, but with the strict understanding that they are for experimental purposes and that reports on their growth must be rendered to the secretary.

Some Barley Bulletins

The Master Brewers' Association through their crop improvement committee is issuing bulletins on the raising of barley for malting purposes. There are a number of points, such as need of purity of variety, treatment of seed for smut, proper harvesting and proper handling, which will not only influence production, but prices, and thus give better returns. These bulletins can be obtained by persons interested in barley production by writing to the secretary, A. J. Eliel, 103d st., Chicago, Ill.

Course in Lumber Industry

A new feature in forestry education is being adopted by the Harvard Business School and the School of Forestry, Harvard University, by the training in scientific lumbering. Forestry education heretofore has been devoted largely to proper handling of the forests. Emphasis in the new course will be upon the profitable ways of handling timber, as it has been found that a good deal of timber, especially from small trees, is cut up at a loss rather than at a profit.

SUGAR 2c a lb.

CALL FOR COMBINATION ORDER NO. 100.

—Our Best Seller—

25 lbs. Sugar (fine dry granulated)	$0.50
2 cans of Oysters or 2 lbs. of Prunes	.25
1 sack Rice or 3 cans Carnation Milk	.25
2 cans Corn, Tomatoes or 6 bars best Laundry Soap	.30
3½ lbs. Small White Beans or 3 lbs. Lima Beans	.25
2 lbs. Tea, any flavor, or 3 lbs. fancy Coffee	1.00
1 large bottle Flavoring Extract, or 2 lbs. best Coffee	.75
3 pkgs. Seeded Raisins or 1 bottle Tomato Catsup	.25
2 cans String Beans or 2 cans Mable Corn	.25
3 lbs. Macaroni, Tapioca or Rice	.25
3 pkgs. Washing Powder or 3 cans Cleanser	.15
1 2-lb. square best Butter or 1 No. 5 pail Pure Lard	.65
1 lb. Fancy Prunes or 1 pkg. Liza Pancake Flour	.15

Total for all unchanged $5.00

SEND FOR OUR MONEY-SAVING CATALOGUE ON GROCERIES

French Castile Soap, per bar	$0.30
Strawberry Jam, large jars, each	.20
3 cans Carnation Milk for	.25
Tomatoes, 2 cans 15c.; dozen	.90
Sugar Corn, 2 cans 15c; dozen	.90
Babbitt's Best Soap, 6 for	.25
Old Dutch Cleanser, 2 for	.15
Sliced Pineapples, 2 cans	.25
Asparagus Tips, per can	.10

A Free Trial Order will make you one of our many well-satisfied Customers.

FREE DELIVERY ACROSS THE BAY. MAIL ORDERS A SPECIALTY. PROMPT SHIPMENTS.

FREESE & CO.

Phone West 25
1260-66 Devisadero, Corner Ellis
San Francisco

There's no system equal to the KOPPEL. It is the quickest and most economical way known to handle dried fruit. Our

NEW BOOKLET

goes into detail and explains why it will be to your advantage to use this money-saving system. No charge. Write NOW. Address

ORENSTEIN-ARTHUR KOPPEL CO.

Los Angeles: 120 S. Los Angeles St.—San Francisco: 231 Rialto Bldg

How Many Years Will Your Car Last?

The oil you use is an important item in determining this question. Your car cost a great deal. Oil costs very little. It is poor economy to use anything but a high grade *quality* oil.

ZEROLENE

THE STANDARD OIL FOR MOTOR CARS

is the *best automobile oil the Standard Oil Company can make*—produced after 40 years experience in the manufacture of oils for hundreds of different purposes and backed by the Company's long established quality guarantee. You can rely on Zerolene with absolute confidence. It is giving satisfactory service to thousands of motorists.

Dealers everywhere. Ask our nearest agency about delivery in bulk.

Standard Oil Company
(CALIFORNIA)

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

Useful and Up-to-Date Patterns

No. 5539—Misses' Costume. Without lining, having long one-piece sleeves perforated for short sleeves, adjustable shield, high waistline and attached two-piece skirt. Width around lower edge about 1½ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 4⅛ yards 36-inch material, with ⅝ yard 18-inch lace for shield and standing collar. Price, 15 cents.

No. 5663—Lady's Waist. Without lining, having adjustable shield and long one-piece sleeves perforated for short sleeves. Sizes 32, 34, 36, 38, 40 and 42 bust. Size 36 requires 2¾ yards 36-inch material, ⅞ yard 27-inch contrasting material for collar and front, and ⅝ yard 18-inch lace for shield and standing collar. Price, 15 cents.

No. 5544—Maternity Dress. Without lining, having long one-piece sleeves perforated for short sleeves, adjustable shield, high waistline and attached three-piece skirt in regulation or shorter length; length of skirt in front from natural waistline 42, back 44 inches; perforated for 40 inches front, 42 inches back. Width around lower edge about 1⅝ yards. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 4⅜ yards 44-inch material, with ¾ yard 18-inch lace for shield and standing collar. Price, 15 cents.

No. 5496—Misses' Coat. Having one-piece sleeves, turned back at lower edge to form cuffs; length at center back from neck to lower edge, 42 inches. Sizes 14, 16, 18 and 20 years. Size 16 requires 3¼ yards 54-inch material. Price, 15 cents.

No. 5180—Misses' Waist. With lining having high or open neck and long one-piece sleeves perforated for shorter length (which may be omitted). Closing to left of center-front. Sizes 14, 16, 18 and 20 years. As illustrated, size 16 requires 1¼ yards 36-inch material with ⅝ yard 18-inch net. Price, 15 cents.

No. 5214—Misses' Apron. Width around lower edge about 1¾ yard. Sizes 14, 16, 18 and 20 years. Size 16 requires 3¼ yards 36-inch material. Price, 10 cents.

No. 4311—Misses' Kimono. Having full length sleeves or cap-sleeves. Sizes 14, 16 and 18 years. Size 16 requires 4 yards material 36 inches wide with 2 yards contrasting material for bands. Price, 15 cents.

No. 5565—Lady's Jacket. Having sleeves combined with body and with notched or shawl collar. Length of jacket at center-back from neck to lower edge, 25½ inches. Sizes 32, 34, 36, 38, 40 and 42 bust. Size 36 requires 1¾ yards 54-inch material. Price, 15 cents.

No. 3634—Boy's Coat. Having rolling collar and two-seam sleeves with turn-back cuffs. Sizes 4, 6, 8, 10 and 12 years. Size 8 requires 1¾ yards 54-inch material. Price, 15 cents.

No. 4837—Girl's Dress. Having one-piece sleeves perforated for shorter length. Detachable shield and attached side-plaited skirt. Sizes 4, 6, 8, 10 and 12 years. Size 8 requires 3⅝ yards 36-inch material. Price, 15 cents.

No. 4312—Child's Night Dress. Having two styles of sleeves. Pattern is cut in three sizes—½, 1 and 2 years. Size 1 requires 2¼ yards 36-inch material, or 3¼ yards 27-inch material. Price, 10 cents.

No. 5616—Lady's Costume. Without lining, having high, round, square or V-shaped neck, high waistline, long one-piece sleeves in one with body and perforated for short sleeves in either of two lengths. Attached two-piece skirt in regulation or shorter length. Lower front edge of skirt straight or rounded. Suitable for flouncing. Width around lower edge about 1½ yard. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 5¾ yards 36-inch material. Price, 15 cents.

Address all pattern orders to Household Department, "Orchard and Farm," Hearst Bldg., San Francisco, Calif.

Co-Operative Laundry Lightens Work

CO-OPERATION of all kinds is helping the farmer, and one of the best kinds is co-operative laundrying to take the burden of "blue Monday" from the shoulders of the farmer's wife. There is such a laundry at Chatfield, Minn., which a recent news letter of the U. S. Department of Agriculture speaks of. A co-operative laundry is either planned or in operation as a part of the Riverdale Co-operative Creamery, Riverdale, Cal.

The laundry at Chatfield is operated in connection with a co-operative creamery and manned by the same officers and directors. The two companies are run separately, the laundry paying a reasonable rental to the creamery for the use of a part of the building. Modern laundry machinery was installed at an expense of $2,600 and an experienced laundry worker employed as superintendent. Seventy per cent of the stock is owned by farmers. During the first year of operation, which has just closed, the receipts were $5,403. Seventy per cent of this was paid out for wages. A 10 per cent dividend to patrons was declared and 6 per cent additional to stockholders.

Chatfield is only a small village and the laundry is almost purely an open country proposition. Coarse clothing of all sorts—overalls, rugs, bed clothing, as well as the finer fabrics—are handled at a charge of five cents per pound for washing and ironing. An extra charge is made for ironing fancy pieces by hand.

Farm Produce by Parcel Post.

The parcel post for farm produce seems to be taking in Missouri, judging from a circular issued by the postmaster for benefit of residents. This contains a list of 150 names of farmers who have applied for privilege to ship in farm product. After each name is a list of goods offered for sale. For example, one man offers eggs, chickens, vegetables, and in season, apples, blackberries, raspberries, strawberries, dewberries, peaches, grapes and plums. The next man offers eggs in 24 or 30 dozen cases and the one just below only eggs. Then the fourth offers white clover honey in five-pound pails; a fifth butter, eggs, pickles, catsup, farm produce and fruits; and a sixth just farm produce. Some specify amounts, as 10 dozen eggs per week and butter 30 cents a pound the year round. The consumer has a great lot of goods to select from.

On this blank is an inquiry blank to be used by the consumer. It has space for address of farmer, then: Please send me information and prices of the following: —— dozen eggs, —— pounds honey, —— pounds butter, —— honey; farm products, poultry and other articles as follows: * * * Please let me know how much you can send me daily or weekly, properly packed in accordance with the Postal Laws and Regulations, via United States Parcel Post. Then comes address of prospective customer.

The fundamental idea is to bring the producer in touch with the consumer. Opportunity for c. o. d. shipments (collect on delivery) is given by paying a fee of 10 cents in addition to regular postage. The goods have to be so packed as to arrive safely and without damage to other parcels.

To Preserve a Husband

Select with care; the very young and green varieties take longer to prepare, but are often excellent when done; those too crusty take a long time to cook tender. One neither hard nor yet very soft will give best satisfaction.

Do not keep in a pickle, nor in hot water, for even a little while, as this toughens the fiber, retards the cooking and often spoils the result. Never prick to test for tenderness; this leaves a mark, and they are never so smooth afterward.

Even the poorer varieties may be made sweet and tender by the following method: Wrap in a mantle of charity and keep warm over a steady fire of loving domestic devotion; garnish with patience, well sweetened with smiles, and flavored with kisses to taste. Serve with peaches and cream. When thus prepared, they will keep for years.

Send Only $1.00 for this Comfortable Rocker

Price $12.50
Freight Prepaid

One Dollar Down
50c a Week, or $2 a Month,
Whichever You Prefer.

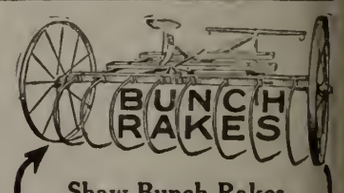
This rocker is large and roomy of beautiful material and design and the best of workmanship. It would cost $15.00 anywhere else and you can't buy a more comfortable rocker at any price.

Our furniture lasts a lifetime. We guarantee satisfaction. Examine this rocker, if not satisfied return it at our expense and your money will be returned to you without question.

Slip $1.00 in an envelope to-day mail it to us, stating whether you wish to pay the balance in weekly or monthly installments, and we will ship the chair, freight prepaid, the day we receive your order.

Many other styles at all prices. All kinds of wicker furniture. Send for free catalog.

Pacific Coast Rattan Co., Inc.,
16th and Jefferson Sts.
Oakland, Cal.



Shaw Bunch Rakes

Made especially for heavy work that no other rakes are fit for. Primarily made to bunch hay out of wind-rows, also to do any heavy work such as raking cornstalks, sage brush, etc.

High wheels, rigid teeth, strong, rigid frame.

Descriptive Literature on Request

THE H. C. SHAW COMPANY
Manufacturers
52 N. CALIFORNIA ST.
Stockton, California

When answering advertisements, please mention "Orchard and Farm."

GROCERIES BY MAIL

Buy from Black's and save the middlemen's profits. We purchase by the carload from manufacturers and sell direct to housewives throughout California.

Two distributing points insure you prompt delivery and cheap freight. Write to either store for catalog. Mention this paper.

Blacks Pkg. Co. Fresno, California San Jose, California

The Household Exchange

THE laundry helps suggested by many housewives this month are so interesting and practical that we are sure that they will be very profitable to all of our readers. The household exchange is getting more helpful and valuable every month.

For the June issue the very important subject of Hot Weather Suggestions to be taken up. Any suggestion that makes for comfort or convenience during the hot summer will be received; how to keep the house cool, the baby cool and healthy, the food from spoiling, how to prepare the summer meals, etc., all would come under the above subject. Suitable prizes will be given for the most helpful suggestions.

The following rules must be observed in writing for this department:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only, and sign name and address after each suggestion.

Not more than two suggestions a month may be sent by one person. Do not send a letter with your suggestions. The suggestion itself is enough.

The editor reserves the right to publish any suggestions, whether or not they win a prize.

This contest is not confined to California alone, but is open to "Orchard and Farm" subscribers in any State.

Address all your suggestions to Household Editor, "Orchard and Farm," Pearst building, San Francisco, Cal.

The names of the five whose suggestions seemed of the highest value, and the awards they were given for are as follow:

First prize (Mrs. Frank Swanson, Fallon, Cal.)—Twenty-six-piece silver set ---------- $8.00

Second prize (Mrs. J. Leutholtz, Birds Landing, Cal.)—Set of six silver tablespoons and six teaspoons ---------- 4.00

Third prize (Mrs. P. J. Anderson, Conrad, Mont.)—Set of six silver knives and forks ---------- 3.50

Fourth prize (Mrs. Ida M. Robinson, Helena, Mont.)—Silver sugar shell and butter knife --- 2.00

Fifth prize (Frances Joseph, Quincy, Cal.)—Food chopper -- 1.75

We hope to use some of the other excellent suggestions upon laundry helps later. The prize suggestions referred to just above are given herewith:

Removing Stains.

Pour clear boiling water through coffee, tea, cocoa and fruit stains; rub cooking molasses into grass stains; soak blood stains in cold water; dissolve a teaspoonful of oxalic acid crystals in a cupful of boiling water for iron rust spots, and rinse thoroughly; for mildew make a solution of chloride of lime and water and strain and then soak the garment and put in sun. Medicine stains should be wet with alcohol and iodine with chloroform. Fresh ink should be soaked in sweet milk and if not entirely removed, boil in oxalic acid solution, not too strong.—MRS. FRANK SWANSON.

Cleaning Fluid.

To one quart of deodorized benzine add one ounce of alcohol and one-eighth of an ounce each of bay rum, oil of wintergreen, ammonia, chloroform, sulphuric ether and one-eighth of a dram of borax. Do not work near fire. This I find the best I have used and will not injure the most delicate colors in fabrics. Feathers and other things that could not be washed in water can be washed in this.—MRS. J. LEUTHOLTZ.

Washing Fluid Saves Rubbing.

Try this labor-saving washing fluid for your weekly washings: Dissolve one can lye in two quarts soft water. When cool skim and add one pound washsoda, one ounce salts of tartar and four ounces of borax, and place in fruit jar or jug. Use five tablespoonfuls fluid and a half-bar of soap in half-boiler of water. Let clothes boil twenty minutes and, unless very dirty, they will need no rubbing. Rinse thoroughly, blue, and by the time your first lot is on the line a second one will be ready for rinsing. I have used this fluid for ten years and know it will not wear the clothes as much as rubbing. I put my best clothes in the prepared water the previous evening, so when breakfast is over they are clean and ready for rinsing.—MRS. P. J. ANDERSON.

Good Cold Starch.

Dissolve two teaspoonfuls of starch and one teaspoonful of borax in one cup of water; in another cupful of water make strong soap suds with any white soap, Castile preferable. Strain through a cloth the cup of starch and borax into the cup of soap suds. Add bluing to suit. Dip the goods to be starched several times, wring out and spread out and you can iron in twenty minutes if desired. If extra gloss for collars and cuffs is wanted, rub the foam from the soap suds on them after ironing and iron again.—MRS. IDA M. ROBINSON.

How to Wash a Door Panel.

Very frequently lace door panels shrink after washing them, making it impossible to use them again. To prevent this, after removing the panel from the glass door, wash the glass, wash and starch the lace, slip in the rods immediately and replace the panel on the door. Care should be taken to pull the lace straight, tacking down the sides if necessary with thumb tacks, and then allow to dry upon the door. This gives much better results than to launder in the usual manner.—FRANCES JOSEPH.

Cure for Snake Bite

Will some of the sisters please write in some remedies for snake bites? There are quite a few in the hills here, namely, rattlesnakes, red racers, king or corral snakes and the common gopher snakes. I fear for the bare footed youngsters these hot days.—Mrs. C. L. J., Soledad.

In order to suggest a remedy while waiting for replies by those who have had experience in preventing serious effects from snake bites, we will suggest the use of permanganate of potash crystals, which are quite effective. These are more effective than whisky, which generally bites harder than the snake itself. Permanganate crystals can be secured at any drug store and are so convenient that they can be carried everywhere in vest pocket or otherwise, taking up so little space that they will be unnoticed. When a snake bites, slit the wound crosswise with pen knife to let blood carry out poison and insert a crystal or so to burn out any poison that is left. Also bind the injured member tightly above the wound to prevent the poison from being carried up into the general circulation. We will welcome word of other treatment, or better ways of accomplishing this.

Besides the many faults of whisky and its inferiority to permanganate as a cure for snake bites, many persons who carry it for protection soon get to think more about it than they do about the snakes it is supposed to protect from and are worse with whisky and without snakes than with a snake bite and without whisky.

If You Don't Object

to flies, dirt, and germs buy ground chocolate in bulk. If you do, buy Ghirardelli's Ground Chocolate *in hermetically sealed cans.*

D. Ghirardelli Co.
Since 1852

A liberal sample will be mailed free for the asking.

HEALD'S

Schools Located in
San Francisco, Oakland, Fresno, San Jose, Sacramento, Stockton, Chico, Reno, Nev.; Santa Cruz, Los Angeles, Riverside, Long Beach.
Write for Prospectus to the school you wish to attend.
Main Office, Post st. and Van Ness ave., San Francisco.

Free Book

giving a full account of hatching, raising and careing for chickens, with details of a Complete System of Feeding.
Will be sent to you on application.
COULSON CO.
Box F, Petaluma, Cal.

EVERYTHING FOR THE BUILDER
Bargains in Building Material.
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.
Carload Lots a Specialty.
H. McKEVITT & SON
1849 Mission St.
Near 14th St. San Francisco.

How One Mother Gained Her Liberty

—By Helena H. Thomas, Long Beach,—

"SAY, strangers, if you want to see the inside of that house just come over here and git the key!" sang out a little old lady as the two addressed halted before an empty cottage. "No, it isn't mine, but I do it just for accommodation," she added, after going into her own home, like a whirlwind, and producing the key.

The house-hunters were not long in deciding that the one in question was not suited to their needs, however, and as they returned the key, and said as much, the care-taker exclaimed:

"Oh, I'm ever so sorry, for you look like back East folks, and I know I should like you for neighbors! Well, I was raised in Ohio, so seeing we were born neighbors, let's have a visit!"

She said it so insistently, too, that the foot-sore women were glad of the proffered seat under the over-hanging boughs of a pepper tree. No sooner were they seated, however, than their hostess flew into her little bungalow, giving her guests the opportunity to exclaim:

"She is a character, sure enough!"

"As agile as a girl, too, yet, if I am not mistaken, she is not far from eighty!"

There was not time for many comments, though, before the brisk little body reappeared, carrying a tray on which was a pitcher and some glasses, which called forth the exclamation:

"Lemonade! Why, grandma, how kind of you to go to all that trouble for strangers, and how spry you were about it!"

"Well, as to being spry, I'm built that way," was the laughing retort of the one who filled the glasses, "but as to trouble, that don't count for anything, seeing we grow our own lemons and have them a-wasting on the ground. Yes, I'll sit down, too," continued she, dropping into a rustic chair opposite. "Hinder me? It's time I was hindered, for I was dead tired and didn't know enough to stop.

"My, but ain't I a sight!" was her next exclamation, as with a merry laugh she pushed back her sun-bonnet and looked at her bespattered dress. "You see I took a notion this morning to white-wash my chicken-coops, and I white-washed myself, into the bargain, but then that's what brought me to California—to have my liberty, and I'm a-having it to my heart's content, even if I am caught looking like a fright, once in a while, or oftener."

"Excuse me if I interrupt you," exclaimed the flower-lover, who saw that the loquacious body would not come to a pause of her own accord, "but really I haven't seen anything for many a day that reminded me so much of my old home as your little garden. Why, for all the world, if there isn't a bed of red clover! But I never heard of its being cultivated before."

"Of course not!" sniffed the owner of the garden, "for back East we had fields an' fields of it, and was there ever anything sweeter! But here we have to cultivate it if we have it at all, and I got so homesick for the smell of it that after I'd been here one season I sent back to Ohio for some clover seed, and I'm never a-going to be without a bed of it so long as I can handle a hoe, or can see and smell."

Then, pointing to old-fashioned flowers all about them, she added: "'Twasn't a mite homelike not to have 'em, so I sent for 'em same's I did the clover. Oh, yes, of course I've a lot here that I didn't have back East, but you know old flowers—like old friends—are hard to beat, and, brag as they do, California isn't the hull thing!"

Her eyes were a-twinkle as she said it, and yet her manner of expression led one of her interested listeners to ask the leading question:

"That sounds as if you had left your heart behind you. Have you children who hold you here, or is it the climate? Oh, excuse me, if I am too inquisitive for a stranger," the questioner made haste to add as grandma seemed for an instant at a loss for an answer, "but my only excuse is that you greatly interest me."

"Oh, that's all right!" was the laughing reply, "and seeing you're so like some of my own back East folks I'll tell you that nothing but my love of liberty brought me to California and keeps me here. And now, if you are not in a hurry, I'll tell you all about it. 'Twon't take me long, either, for I don't need to tell you that I'm a master hand at talking.

"Live alone?" replied she to a query as she paused for breath. "Land sakes, no! not for good and all, but this week Pa is on a jury case in Los Angeles. I'm not lonesome, though, except for someone to talk to, but I'll make it lively for him when he gits back!

"Well, it's a long story, but I'll leave out more'n I put in, for when one has lived going on 80 there's lots worth telling, if one had the time. But I'll try and remember my failings and cut most of it out by starting in where the children were all married off and Pa and me left alone. And then began such coaxing for us to sell the farm and go to Cleveland, to live near our girls, that we give in."

Just here the droll little body became so convulsed with laughter that her listeners joined in without knowing why, but as soon as the story-teller could control herself she looked down at her well-worn and bespattered dress again and, in the most comical way imaginable said:

"Here sits the mother of as swell ladies as live in Cleveland! Don't you think I do 'em credit?"

"Yes, indeed!" was a merry retort, "for as far as keenness goes I wouldn't wonder if you rival your children even."

"Well, I don't know as to that," laughed grandma, "but I fear I have been a humbler of their pride many a time. But, as I started to say, we didn't git any rest from the children until we heard to 'em. Daughters both have big, fine houses, and the understanding was that their homes would be ours, to go and come as we took a notion

"So, like two old fools, we sold the farm and turned our backs on what will always be the dearest place on earth, and then went to the city to try and live a life that liked to have killed both of us.

"I haven't a mite of fault to find with the children or grandchildren, for we were given the freedom of two elegant homes, but, honest now, a cat in a strange garret isn't anything for lostness to what we were, for we were made to feel every day, by suggestions as to fixing up, that we were in the wrong pew.

"Pa is one of the submissive sort—not much like his other half—and so he would put on a swaller-tail, as meek as could be, and try to act so's not to disgrace his daughters before swell company; but I was brought up an old-fashioned Methodist and I couldn't git away from my early training enough to trail round and talk about the last op-e-ra!"

She pursed up her mouth and ended in such an inimitable way that her listeners were so convulsed with laughter that the story-teller was

Put Your Boy in Overalls

Let him play outdoors with his playmates. Let him romp and play. No need to tell him to be careful of his clothes.

Get Him Two-Horse Brand Overalls

The kind that can't possibly be ripped, that are constructed for absolute comfort and freedom of motion. Even if they do get soiled they are easily washed.

A New Pair **FREE** If They Rip

Made By

LEVI STRAUSS & CO., San Francisco

RED CROWN Gasoline is STANDARD OIL Gasoline

Red Crown is in no sense a new grade or manufacture of gasoline. It is the same product which automobilists have known and relied on for years as "Standard Oil Gas." We have always called it Red Crown and now we wish *you* to know it by that name.

If you purchase Red Crown you are sure of obtaining a thoroughly uniform, reliable gasoline—not a "mixture" but a straight product of refining—the best gasoline the Standard Oil Company can make.

Red Crown signs are furnished to all dealers handling Red Crown Gasoline. Watch for the Sign or ask our nearest agency about delivery in bulk.

Standard Oil Company
(California)

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM

FOUR ROOMS, $347.00

We furnish any number of rooms and any design you need. Send for catalog.

COMMON SENSE AND A HAMMER

Are all you need to build one of our attractively designed cottages or bungalows. Not portable. Absolutely permanent. Save carpenter expense, loss of material in cutting, and many other savings. You get the benefit.

We cut every piece to fit, and furnish doors, windows, hardware, paint and absolutely everything to make the house complete. A numbered diagram tells you how to put it together, without further expense.

Ready Built House Company
84 Broadway Portland, Oregon

KODAKS
and
SUPPLIES
also
DEVELOPING
Printing
Enlarging

We develop any roll of films:
Six Exposures 10c
10 or 12 Exposures, 15c

GOOD RESULTS

That's what you were after when you "snapped" that roll of films—that's your business. But that isn't all—they must be properly developed and printed—that's my business.

Let me develop the next roll.

GEO. E. KNOX
"THE KODAK MAN"
807 K Street
SACRAMENTO, CAL.

Mail this Ad and two negatives—we will make pictures free. Mail your orders. Catalog Free.

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.

Largest pipe works in the West.

WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of August 24, 1912, of
ORCHARD AND FARM

Published monthly at San Francisco, California, for April 1, 1914:

Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Managing Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Business Manager, D. W. Hill, 1761 Grove street, San Francisco, Cal. Publisher, Country Life Publishing Company, San Francisco. Owner, Examiner Printing Company, Hearst Building, San Francisco, Cal. Bartley F. Peart, Attorney-Trustee, Humboldt Bank Building, San Francisco. Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities, none.

D. W. HILL.

Sworn and subscribed before me this 7th day of April, 1914.

[Seal] A. J. HENRY.
Notary Public in and for the City and County of San Francisco, State of California, 656 Market st.

forced to come to a halt for a moment, and then she proceeded:

"So I kicked in the traces, but I kept mum, though, until I'd made up my mind for sure, and then I said to Pa:

"'Let's go to California. We've always wanted to go and now there's nothing to hinder, seeing our money isn't tied up, like it always has been.'

"But, ladies, I didn't tell everything I had up my sleeve," continued she, with a roguish twinkle, "for after living with a man over half a century I've learned that I can bring him around to my way of thinking if I don't spring things on him. So pa fell in with the idea of coming here to see the country and visit some of our old neighbors who had moved here. The children? Oh, they didn't make any objections, for they never suspicioned my motive.

"Well, that's how we broke away from swelldom, and the rest you can imagine, for, somehow, California fever is catching, after folks get here, and, say, pa got it so bad that I sort of played off until we'd bought this place and I knew 'twas a sure thing. But the day pa got on some overalls that I'd packed away, hardly knowing why, and, after starting a garden, came in with a look of content on his face such as I hadn't seen since we left the old farm and sighed:

"'It seems good, ma, to have my liberty once more!' I just couldn't keep mum any longer, but cried:

"'That's what brought me here!' and then I owned up to everything. How did he take it? Oh, he just beamed on me a spell and then said, in his quiet way:

"'Well, ma, I'm satisfied to give you all the glory, seeing I can swap a swaller-tail for overalls an' liberty.'

"How long have we lived here? Seven years, right here. Planted every tree and put out every vine and shrub. Hard work? Yes; lots of muscle has gone into it, but look at our reward!

"Never get lonely or homesick for the children?" continued she, in reply to a query. "Oh, as to seeing 'em, some of 'em come to California every year—put up at some swell hotel and look in on us days.

"Glad to see 'em, of course, though it is easy to see that they are shocked at the way we live, and wonder at the comfort we seem to take. But as to being lonely—you just wait a minnit!" and off rushed the one who an instant later returned with a basket in her hands, and exclaimed:

"Look at these darling little chicks, my latest hatch. Talk about being lonely. Why, my life is too full for that!" and then, with contentment written all over her wrinkled face, and eyes a-twinkle, again she cried:

"I struck for liberty and I gained it."

Home

I turned an ancient poet's book,
And found upon the page,
"Stone walls do not a prison make
Nor iron bars a cage."

Yes, that is true,
And sometimes more;
You'll find wher'er you roam
That gilded walls
And marble halls
Will never make a home.

But every house where Love abides
And Friendship is the guest
Is truly home,
And home, sweet home,
For there the heart can rest.
—Author Unknown.

A West Virginia darkey, a blacksmith, recently announced a change in his business, as follows:

"Notice—De co-pardnership heretofore resisting between me and Mose Skinner is hereby resolved. Dem what owe de firm will settle wid me, and dem what de firm owes will settle wid Mose."—National Corporation Reporter.

ENORMOUS SAVING ON
BUILDING MATERIAL
BUY NOW AT ROCK BOTTOM PRICES

Largest distributors on the Pacific Coast of Lumber, Plumbing Supplies, Sash and Doors, Hardware, Paints and Oil.

We have a complete Mail Order Department for your convenience.

Our prices and quality are beyond comparison. Take advantage of being able to see our entire stock at your own home by merely sending a request for our Catalog, A 4. Mailed free to any address.

—ALL GRADES OF LUMBER—

Our prices on Lumber are at all times below market. Our quality is always up to standard. Let us prove this to you. Get our quotations. We furnish estimates free. We carry all grades of Redwood, Oregon and Sugar Pine, Shingles, Shakes and Laths. Our Mill is equipped with all modern and up-to-date machinery to turn out the finest workmanship in Finish Lumber. Our prompt Delivery System is for your convenience. One trial with us will make you a continuous customer.

PRICES SMASHED ON PLUMBING!!

Finest grades low-down Closet Combinations. Solid Bent Oak Wood Tank. This is an exceedingly handsome bathroom fixture.
$14.00

Best Grade High-Tank Toilet Combinations. Special Value
$12.00

Six-Gallon Closet Tanks, finished in natural and Golden Oak
$5.25

$8.00

Finest Galvanized 24-gauge Steel Bath-Tubs. Cannot be duplicated at this price. Also porcelain bathtubs of every description at $14.50 up.
We guarantee all bathtubs sold by us to be exactly as represented. Our Guarantee Tag goes with every one. If you are not satisfied with your purchase simply return to us and receive refund of full purchase price.

$3.75

Finest Grade Porcelain Lavatories. Every conceivable design and pattern. Write our Service Department if you are undecided as to what you want in Lavatories. Our department will advise you; other grades from—$4.25 up.

One light single casement only 48c Made out of select California Sugar Pine.

Our stock is complete in every detail. We guarantee all material and workmanship. Remember this price is a saving of at least 40%.

One Panel Mission Door, Worth $3, Only $1.50

Our enormous stock of Doors comprises everything imaginable in regulation and stock doors. We also are equipped to make any design to order. The quality will please you. The money you save in buying doors from us is an important item. We will be pleased to furnish estimates and special design free of charge.

Sherwin & Williams and Lowe Bros.' Paints. The kind you buy at $2.25 gal. Our price. $1.40

Worden & Meeker's Bankrupt Stock Paints. Regular price $2.00. Our price $1.25
Shingle Stains, all colors..... 50c
Graphite Roofing Paint, worth $1.10 per gal 50c

Corrugated Iron, per hundred sq. ft......... $3.75
Utility Wall Board. No. 2 grade, per sq. ft.................. 2c
Ready Roofing Paper, including nails and cement sufficeint for laying. per roll $1.40

Galvanized Poultry Wire, 2-inch mesh, in rolls, per sq. ft........... 1/2c
Gas Ranges, 100 different styles .... $4.75 up
Also everything in Fittings, Supplies, Pipe, Vitrified Sewer Pipe, Basin Supplies, Bathroom Trimmings, Laundry Trays, in fact, everything in this line.

FREE Don't fail to clip out coupon opposite, and receive our 1914 Catalog A 4 absolutely free. You will find it both convenient and economical to refer to when in the market for Building material, Plumbing Supplies, etc. It also tells you how our Service Department will help you in figuring out your plans and making your selections. It fully explains our Guarantee Money-Back Tag that goes with every article purchased from us. This is your absolute protection and compels us to satisfy you in every respect or refund your money. Write us for our catalog today. It will save you money.

Whiting-Mead Commercial Co., O.&F.
415 East Ninth Street,
Los Angeles, California.
Please send, FREE, your 1914 Catalog.
Name ....
City ....State ....

WHITING-MEAD COMMERCIAL CO.
9th Street & Maple Ave. Los Angeles, Cal.

Fireproof, Durable
Easy to apply

APOLLO
ROOFING

Send for free booklet
"Better Buildings"

Made from the well known APOLLO BEST BLOOM Galvanized Sheets, and unexcelled for lasting service and satisfaction. APOLLO BEST BLOOM Galvanized Sheets are specially adapted for Culverts, Silos, Tanks, Cisterns, Roofing, Siding, and all forms of sheet metal work. Sold by weight by leading dealers everywhere. Accept no substitute.

AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg., Pittsburgh.

Readers' Experiences With Silk Worms

FOR the benefit of those who might wish to experiment with silk worms, I will relate my experience.

The eggs were furnished gratis by the experimental station for the purpose of ascertaining whether the worms could be raised successfully on a diet of osage orange (common hedge) leaves, instead of the mulberry.

When the eggs arrived (a small tablespoon full) I thought they had sent black mustard seed by mistake, as they are much alike in size and color. It was then the fore part of April; I laid the eggs carefully away on a piece of paper. On the 10th of May by a close examination I could barely discern a movement. I transferred them carefully to a hedge leaf.

I could actually see the atoms grow. First the leaf was laid on a book, then I transferred them to a full-sized newspaper, their next move was to a frame composed of lath, and finally they were placed on my quilting frame covered with cheesecloth.

Talk about eating! Their appetite beat anything I ever saw or heard tell of. I could really hear them chewing. Every few days they stop, apparently to rest, and stand upright for twenty-four hours, then shed their skin and eat with renewed vigor. They moult three times during their life.

Their appetite was so great I had to enlist the aid of my little brother to gather leaves.

In the adult stage they are about the size of one's finger, smooth and light gray in color; very ugly things I thought, but my brother took great delight in smoothing their backs and they seemed to enjoy it also. He made regular pets of some of them.

When the worms are small the leaves alone are gathered, but as they grow, short branches are broken off and laid on top of those that are eaten, when they quickly crawl on the fresh leaves; then they are lifted to one side and the old leaves, branches, excrement, etc., are all taken away and the worms are replaced. This has to be done each day during the last week.

They must be in a warm room, but away from the sun and wind.

About thirty days after hatching they begin to crawl around searching for places to spin. I tied wisps of hay on the frame, and they would crawl up the stems, fasten the rear end of themselves thereto and wave their heads back and forth, until they entirely disappeared and in their place was a light yellow, soft cocoon.

My brother put some in water and unwound quite a skein of beautiful, fine silk.

After they had all spun their cocoons I "harvested" them. They were inclosed in a bag of mosquito netting, then a frame of lath and forwarded to the experiment station, and in a few days a received a check for five dollars; not very remunerative, to be sure, but a very interesting and instructive experiment that I have never regretted.—Mrs. M. N. Wilcox, Orland.

Lettuce for Silkworms.

I read with much interest your article on silkworms in the April number of "Orchard and Farm." I kept silkworms in England for some years and gained a great deal of experience.

For economy in the enterprise let me suggest that lettuce be used as feed for the worms. In this fine climate crops of lettuce can be grown in rotation at very little expense on almost any kind of land. The worms must be fed the lettuce from the beginning and the lettuce must be dry, never damp with the dew.

Worms fed on lettuce produce a silk lighter in color than those fed on the mulberry but quite the same in quality and quantity. I have tested them side by side. I had every success with my venture and was troubled very little by disease. When I did lose a few worms I could usually trace the trouble to wilted or damp leaves given them by some one I had left in charge. Lettuce as a food may have been already tried by Professor Woodworth.

I never used my own eggs, but changed with other silkworm keepers. I found this kept up a strong strain of worms, as the care and feed of these worms must necessarily differ a little with each individual.—Elizabeth O. McKenzie, Santa Rosa.

Silo a Livestock Fundamental

(Continued from Page One).

ary alfalfa ranch where alfalfa is breakfast, lunch and dinner, or where cutting and feeding green corn is too much labor. A variety of feeds is of itself highly desirable; alfalfa is so highly nitrogenous that corn makes an ideal combination with it and enables the cows to get considerbly more nutriment from the alfalfa than they would from alfalfa alone; and the advantages of having green feed in the ration in some cases makes a ton of silage worth a ton of alfalfa hay by weight, as well as making the cows do better.

You can put almost anything green in the silo. Originally the first cutting alfalfa was largely used and is yet. The cows enjoy it and it makes fine feed, though the odor is something fierce. The last cutting can be used as well, and in case of late rains the silo is one means of saving it. Very frequently rains destroy the first cutting of alfalfa, and late alfalfa also cannot be used. Rain is good for silage and it don't hurt the alfalfa a bit. The saving of the first crop can well more than pay for the whole silo and all the labor of putting in the alfalfa. Likewise, the fermentation softens the foxtail in the first crop and the silo is of big value for that reason. As the corn is about gone when the alfalfa is ready, the silo can be used for both almost as well as not.

Barley or oats cut early and with considerable water added, if necessary, can also be used. Corn is the ideal crop, and milo, kafir or any of the sorghums can be used as well. The latter fact might surprise some people, but the fact is of great importance in California. Details on this are given in this issue in the article upon the kafirs or grain sorghums.

And a very important feature of the making of silage from corn or one of the kafir family is that every bit of the nutriment and of the effort of the plant except for the root, is turned into cow feed. Thus it saves a great deal of nutriment, figured at 40 percent, that is usually lost in the fodder when shelled corn is produced. This is a way that the silo boosts corn along in California. We need corn in California to fit in with alfalfa and the silo gives us full service from it all.

In building a silo, the larger it is the more it will hold in proportion to its size and therefore the more economical, for the silage packs down tight the deeper it is. A silo 12 feet in diameter and 32 feet high, will hold about 75 tons, while one 20 feet in diameter and 35 feet high will hold 258 tons. Thus a man can figure out by knowing how many cows he has and feeding them 40 pounds a day, just how much silage he should have and how large a silo he should build. It is disastrous, however, to build too big a silo, as the cattle can not eat it off fast enough to keep it from spoiling.

FOURTH printing of the joyous story

SUNSHINE JANE

By ANNE WARNER

Author of "The Rejuvenation of Aunt Mary," etc.

"It makes no difference whether you're a Grouch or a Sunshiner, you will want to become acquainted with 'Sunshine Jane.'"—*Boston Globe.*

Jane Is a Joyous Ray of Sunshine

Frontispiece. 287 pp. $1.00 net; by mail $1.09

Boston: LITTLE, BROWN & CO., Publishers.

A WONDERWAY THROUGH PICTURELAND

WESTERN PACIFIC

DENVER & RIO GRANDE

Unfolds to the Traveler a Magnificent Panorama of Snow-Capped Peak, Canon, Gorge and Crag

Marvelous Scenic Attractions Seen from the Car Window Without Extra Expense for Side Trips:

Grand Canon of the Feather River	Canon of the Grand River
Pilot Mountain	Eagle River Canon
Mirage Land	Tennessee Pass
Glistening Beds of Salt	Mount Massive
Great Salt Lake	Collegiate Peaks
Salt Lake City	Grand Canon of the Arkansas
Castle Gate	Royal Gorge
Glenwood Springs	Pikes Peak

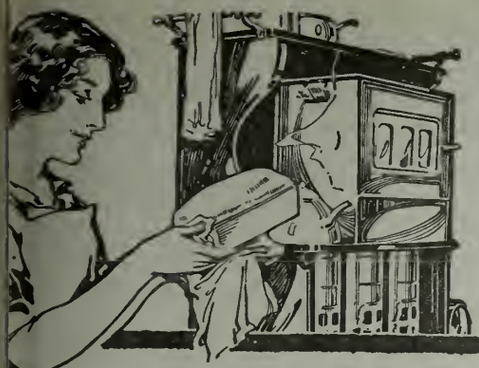
Choice of Two Routes Through the Rocky Mountains

Through Standard and Tourist Sleeping Cars between San Francisco, Oakland, Sacramento and Salt Lake City, Denver, Kansas City, Omaha, St. Louis and Chicago.

Illustrated booklets descriptive of "The Scenic Route to the East" free on request.

E. L. LOMAX
Asst. Pass. Traffic Manager
San Francisco, Cal.

F. A. WADLEIGH
Passenger Traffic Manager
Denver, Colo.



Bakes to Perfection

"I had no idea this Oil Cook Stove would bake bread and cook everything just like my steel range. But it does. And best of all my kitchen stays cool these hot days. Besides, there's no coal or wood or ashes to lug. Oh, I'm delighted with it."

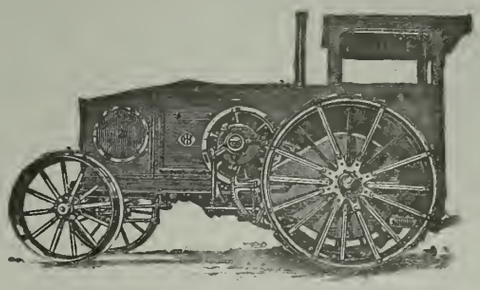
New Perfection OIL COOK STOVE

It bakes, broils, roasts and toasts—perfectly. It does all that any wood or coal stove can do—and at less cost. It doesn't smoke; doesn't taint the food. Clean, safe, convenient. Ask to see it at your dealer's.

FOR BEST RESULTS USE PEARL OIL

STANDARD OIL COMPANY
(California)

International Harvester Oil Tractors



The I H C Line

GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Peg, Spring-Tooth, and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

AN International Harvester tractor, Mogul or Titan, reduces the expense of heavy farm work—plowing, disking, harrowing, grubbing, harvesting, and hauling.

To know the remarkable capacity and year-round efficiency of International tractors send for our tractor catalogues. They explain all the features to you—the compressed air starting system, the throttling governor, the dust and grit proof engine, the simple construction, the ease of operating, etc. They tell you how the modern tr ctor has revolutionized field and barnyard belt and drawbar work—saving time, labor, and money.

I H C tractors are simple and strong. They are built in several styles and all sizes, from 6-12 to 30-60-H. P. operating on kerosene and gasoline. The I H C line also includes all styles of general purpose engines from 1 to 60-H. P.

Write us today for instructive illustrated catalogues of I H C tractors and engines. We will tell you where you may most conveniently see the machines.

International Harvester Company of America
(Incorporated)
Denver—Helena—Portland—Spokane—Salt Lake City—San Francisco
Champion Deering McCormick Milwaukee Osborne Plano

California

¶ Is a land of valleys and the advantages it offers to the farmer are dependable.

¶ Water for irrigation comes from mountain streams and a vast underflow.

¶ The climatic conditions insure larger returns per acre than is possible in less favored localities.

¶ There is also the benefit of a great variety of products.

¶ The movement of population into California is rapidly increasing.

Write to any of our agents for Map, Folders and Illustrated Literature.

Southern Pacific

LIVESTOCK

Have You Livestock You Want to Sell?

BREEDERS —AND— OWNERS

Do You Want to Buy Livestock?

ORCHARD AND FARM keeps in close touch with the breeders of pure-bred stock on the Pacific Coast, and it offers you co-operation in your efforts to

Build Up Your Herd

or to dispose of your surplus stock.

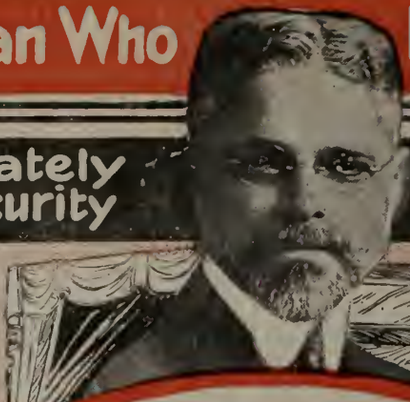
Livestock is the life of the farm. Orchard and Farm gives you valuable hints in every issue on its care and management. Our new livestock folder will be sent free on request. It contains something every farmer and breeder should know.

Address Livestock Department

ORCHARD AND FARM

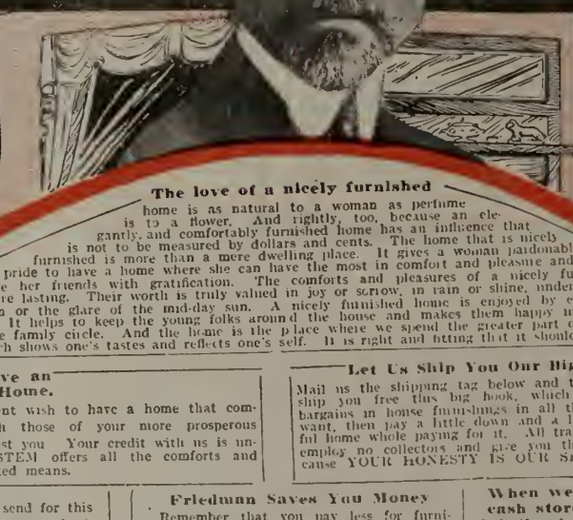
Hearst Building **San Francisco**

Friedman, The Man Who Makes Homes For Millions



We Trust You Privately
Your Honesty Is Our Security

30 Days Free Trial
No Collectors—No Red Tape



The love of a nicely furnished home is as natural to a woman as perfume is to a flower. And rightly, too, because an elegantly, and comfortably furnished home has an influence that is not to be measured by dollars and cents. The home that is nicely furnished is more than a mere dwelling place. It gives a woman pardonable pride to have a home where she can have the most in comfort and pleasure and can receive her friends with gratification. The comforts and pleasures of a nicely furnished home are lasting. Their worth is truly valued in joy or sorrow, in rain or shine, under the beams of the moon or the glare of the mid-day sun. A nicely furnished home is enjoyed by every member of the family. It helps to keep the young folks around the house and makes them happy in bringing their friends within the family circle. And the home is the place where we spend the greater part of our lives, and it is also the place which shows one's tastes and reflects one's self. It is right and fitting that it should be nicely furnished.

How you can have an Elegantly Furnished Home.

If it has been your long and ardent wish to have a home that compares favorably in furnishings with those of your more prosperous neighbors, you can gratify it. We trust you. Your credit with us is unlimited. FRIEDMAN'S CREDIT SYSTEM offers all the comforts and luxuries of the rich to those who have limited means.

Let Us Ship You Our Big Book Free

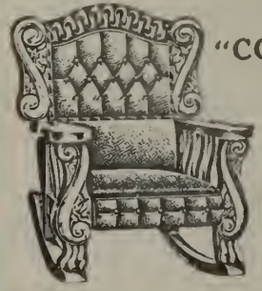
Mail us the shipping tag below and the day we receive it we will ship you free this big book, which contains the most remarkable bargains in house furnishings in all the world. Select any articles you want, then pay a little down and a little now and then. Enjoy a cheerful home while paying for it. All transactions are strictly confidential. We employ no collectors and give you the most liberal credit in the world because YOUR HONESTY IS OUR SECURITY.

The Great Convenience of the Friedman Credit System When you send for this big free bargain book you are bringing the Biggest Furniture Store on the Pacific Coast into your home. You make selections at leisure and consult with your family as to what you most wish. Having this book in your possession means that you don't have the trouble of going into a store and buying and perhaps have a salesman try to force you to buy something you don't want.

Friedman Saves You Money

Remember that you pay less for furniture bought from us than you would at any cash store in your own town. We control the output of many large furniture factories. We buy our material direct and we sell direct. There are no wholesaler's profits, no retailer's profits, no salesmen. We sell direct to you and we offer you the largest selection to be found on the Pacific Coast.

When we state that we can and do undersell cash stores we mean just that. How can we do it? Simply by using for your benefit our 35 years of buying knowledge and our Million Dollars' Buying Power.

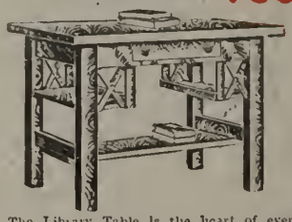


This Superb "COMFY RECLINING" ROCKER

only **50c** a month

Large, roomy, well made, with a high, wide back and seat upholstered in black Boston leather—it is COMFORT itself. The seat is made over full steel springs, the back adjusts to any reclining or sitting angle you want, and a restful disappearing footrest extends from underneath whenever you want it. If you want to enjoy pure comfort every day in your life, get this chair. $4.95 total. 50c a month.

OLD MISSION LIBRARY TABLE, Per Month, 75c



The Library Table is the heart of every true home. Often it is the family work bench. The more attractive it is the stronger family ties and home influence will become. Here is a working, friendly, good looking library table of beauty and utility. Made of solid oak it has the real old mission fumed effect. A good sized drawer fits perfectly into the solid box top. Large ornamental book shelves are conveniently set into each end. The wide magazine shelf screwed in across the bottom braces the table firmly. Top 24x31 inches, just the right size. Weight about 70 lbs. Price only $9.10, or 75c A MONTH; 30 days' free trial. Your money back and freight paid both ways if you want it.

Greatest "Complete Bed Outfit" Offer Ever Made

$1.00 a month

Here is a complete continuous-post bed that you will be proud to have in your home. Its charm lies in its pure simplicity. With pillars two inches in diameter, a head 58 inches and a foot 40 inches high, it has an air of massive strength and richness not to be found in any other make. Take your choice of the finest Vernis-Martin gold finish, or a beautiful soft combination of cream and gold.

The Mattress has a pure elastic felt top built over the softest, finest excelsior, and is comfort itself. It is diamond tufted, hand quilted throughout, 5 inches thick and in double bed size; weighs 35 pounds.

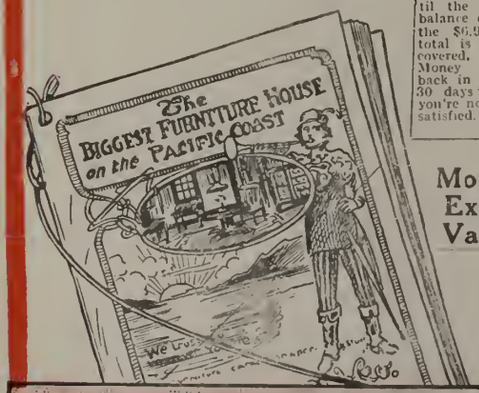
The Springs are made of the highest grade oil tempered steel and are supported and kept from sagging by five heavy steel cables. The frame is made of the finest Oregon fir rails. We have learned they're the best. You get the benefit of our experience.

30 Days Free Trial

If you want a handsome piece of furniture by day and sound refreshing sleep in solid comfort by night, order this "Complete Bed Outfit" for 30 days' free trial. Price $12.95. **$1.00**

6 FINE DINING-ROOM CHAIRS 65c Per Month

Here is a comfortable, handsome dining room chair that will stand the test of time. Made of solid golden elm with firm, shapely legs, two strong back braces, tasty carving and mortised rungs, it is a joy to have in the house. But our price, golden finish, is only $1.15. Weight 10 lbs. 65c a month for six chairs until the balance of the $6.90 total is covered. Money back in 30 days if you're not satisfied.



Most Remarkable Extension Table Value 75c a month

Here's just the table you have been looking for at your price. A splendid dining-room table with a 42-inch top—a 6-foot extension and an 8-inch pedestal base. It is made of solid Oregon fir in both golden and fumed finish to suit your taste. Weight 90 lbs. Price has been brought down to $9.90 to make it a "Special," 75c a month. You will be delighted with it.

WANT A RUG BARGAIN?

Here's a chance you never had before to get a first quality Seamless Brussels Rug—Standard 9x12 feet size, for only $9.90, or

75c a Month

Surface of selected woolen yarns closely woven into a beautiful medallion center with blending colors of soft green, red and tan. Highly recommended, guaranteed to wear. If your home would be brightened and made more attractive by a new rug don't hesitate a minute. Terms 75c a month. Money back upon delivery if you don't like it.

GUARANTEED

REMEMBER that every single article sold by M. FRIEDMAN is GUARANTEED to be exactly as represented. You run no risk in any respect.

Write Your Name On This Tag—Mail It Today And We Will Ship You The BIG FREE ILLUSTRATED BARGAIN BOOK

Name _____

Address _____

M. FRIEDMAN & CO.
281 Post St.
San Francisco.

A Surprise Awaits You

Every one of the above mentioned bargains are fully described in our NEW BIG MONEY SAVING ILLUSTRATED CATALOGUE. But they are only a few in a thousand—all of which are described in this great book. You must see it. It is overflowing with surprises. You never have seen such a line of splendid furniture and household goods in your life as you will see displayed in its pages. Most of all the astounding low prices will surprise you. They will show you how to both save money and how you can afford to have everything you want.

Friedman's Great Catalog

will interest you more than any story or book you've read for years, and IT'S FREE.

THE FIRST THING FOR YOU TO DO, the first right now, is to fill out and send in this shipping tag. The catalogue will arrive almost before you know it. Whether you need anything now or not send for this book of surprises. Your copy is here waiting for you. Get this tag in the next mail.

FREE Send For This Big Book—Now

ORCHARD and FARM

HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888

IRRIGATION

STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 6 Published by Country Life Publishing Co. June, 1914 Hearst Building, San Francisco, Cal. $1.00 a Year

Views at the Tractor Demonstration, Showing Avery, I. H. C. Mogul, Golden Gate, C. L. B. Track Layer, Samson Sieve Grip, Baby Caterpillar.

Stey-Brae Ayrshires
BULLS FOR SALE
From imported cows. These bulls are large, with good colors. For particulars and prices, address
E. B. McFARLAND,
San Mateo, Cal.

For Intensive Tillage
Cutaway
CLARK
Disk Harrows and Plows
A style and size for every farmer
THE CUTAWAY HARROW COMPANY
Makers of the original CLARK disk harrows and plows
996 Main Street Higganum, Conn.

OHIO IMPROVED
CHESTER WHITE SWINE
Weaned pigs of both sexes now ready. Immunized against hog cholera by the combination treatment. Seven separate and distinct blood lines. All stock crated and registered free.
C. B. CUNNINGHAM,
Mills, Sacramento Co., Cal.

Orchard and Farm
BRINGS RESULTS
The experience of one of our Classified Advertisers, told in his letter below, may help others who have something to sell.

ORCHARD AND FARM,
San Francisco, Cal.
Gentlemen—Our small ad in the classified department surely is bringing us results, and we find it one of the best advertising mediums on the Coast.
Yours for success,
CALDWELL BROS.
Los Angeles County.

Write us for costs, etc., or ask for suggestions as to how you can advertise cheapest and most effectively in Orchard and Farm.
Address
Advertising Department
ORCHARD and FARM
HEARST BUILDING
San Francisco

When answering advertisements, please mention "Orchard and Farm."

CONTENTS FOR JUNE, 1914

	Page
WALNUT ADVANTAGES IN CENTRAL CALIFORNIA	1
CO-OPERATION A CURE FOR HIGH COST OF LIVING	2
INTENSIVE PORK PRODUCTION IN CALIFORNIA	3
THE FINANCIAL SIDE OF COTTON	4
PROGRESS AT THE STATE INSECTARY	4
RULES FOR FARM LABOR CAMPS	4
"ORCHARD AND FARM'S" TRACTOR DEMONSTRATION	5
LEADING FEATURES OF THE TRACTORS	6
THE SELECTION OF A PUMPING PLANT	8
CALIFORNIA COUNTIES AT THE EXPOSITION	9
EXPERIENCES IN OLIVE CULTURE	10
CROP CONDITIONS IN CALIFORNIA	12

Senator Ingall's Tribute to the Grass

Next importance to the divine profusion of water, light and air, those three physical facts which render existence possible, may be reckoned the universal beneficence of grass. Lying in the sunshine among the buttercups and dandelions of May, scarcely higher in intelligence than those minute tenants of the mimic wilderness, our earliest recollections are of grass; and when the fitful fever is ended, and the foolish wrangle of the market and the forum is closed, grass heals over the scar which our descent into the bosom of the earth has made, and the carpet of the infant becomes the blanket of the dead.

Grass is the forgiveness of Nature—her constant benediction. Fields trampled with battle, saturated with blood, torn with the ruts of cannon, grow green again with grass, and carnage is forgotten. Streets abandoned by traffic become grass grown, like rural lanes, and are obliterated. Forests decay, harvests perish, flowers vanish, but grass is immortal. Beleagured by the sullen hosts of winter, it withdraws into the impregnable fortress of its subterranean vitality and emerges upon the solicitation of spring. Sown by winds, by wandering birds, propagated by the subtle horticulture of the elements, which are its ministers and servants, it softens the rude outlines of the world. It evades the solitude of deserts, climbs the inaccessible slopes and pinnacles of mountains and modifies the history, character and destiny of nations. Unobtrusive and patient, it has immortal vigor and aggression Banished from the thoroughfare and fields, it bides its time to return, and when vigilance is relaxed or the dynasty has perished it silently resumes the throne from which it has been expelled but which it never abdicates. It bears no blazonery of bloom to charm the senses with fragrance or splendor, but its homely hue is more enchanting than the lily or the rose. It yields no fruit in earth or air, yet should its harvest fail for a single year, famine would depopulate the world.

ANSWERS FOR FARM PROBLEMS	14
EDITORIAL	16
CALIFORNIA ASPECTS OF THE BREEDS	17
SUCCESS WITH CALF RAISING	20
RAVENSWOOD HERD OF SHORTHORNS	21
HELPS IN KEEPING CREAM SWEET	22
DAIRY OPPORTUNITIES OF CHINA	25
ESSENTIALS OF POULTRY SUCCESS	28
OFFICIAL DIRECTIONS ON SETTING A HEN	29
FIGHTING "CHICKEN BUGS" IN HOT WEATHER	30
THE ELF BOY AND THE SPRING	31
THE HOUSEHOLD EXCHANGE	33
CHILD TRAINING: "DO" BETTER THAN "DON'T"	34
VALUABLE HINTS FOR THE KITCHEN	34
USEFUL AND UP-TO-DATE PATTERNS	35
SOME HOT WEATHER HELPS	36

LIVESTOCK
BREEDERS AND OWNERS

Orchard and Farm
keeps in close touch with the breeders of pure-bred stock on the Pacific Coast, and it offers you co-operation in your efforts to

Build Up Your Herd

or to dispose of your surplus stock. Write us if you want this co-operation and our knowledge of conditions may prove invaluable to you.

Livestock is the life of the farm. Orchard and Farm gives you advice in every issue on its care and management. Turn to the livestock pages of this issue and note the splendid series of livestock articles—the up-to-date Pacific Coast features that every Western breeder should know. If you want a sample sent to a friend, write for it.

Address
Livestock Department
ORCHARD and FARM
HEARST BUILDING
SAN FRANCISCO

ORCHARD AND FARM
IRRIGATION

Vol. XXVI JUNE, 1914 No. 6

Walnut Advantages in Central California

By D. J. Whitney, Editor

There are very few fruits from hich a person can be sure of get-ng uniformly good profits year after ear, knowing that they will produce ell and bring every year fair prices ithout danger now and again of the arket being overdone, or some ther unfortunate conditions arising. he walnut provides one of the few nd happy exceptions to this.

We are sure of good prices and a ide market; we are sure that no atter how production increases in alifornia, the demand will be such s to take all that are produced with-ut material sacrifice of price. If roduction is up to standard, we are ot only sure of fair profits, but of ig profits. In addition, walnuts are ery nice to handle in practically very way and they are deservedly opular every place where they will o well. Where they find a satis-ctory location they also, as a rule, roduce quite uniformly.

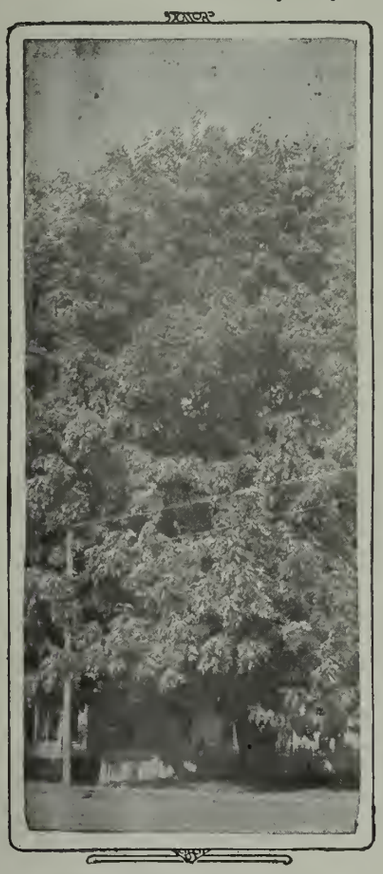
Thus far the only district where alnuts have done well enough to be-ome of special note commercially is ear the coast of Southern Califor-ia. There have been fairly extensive ommercial plantings in the San rancisco Bay district and in other laces here and there to a still less xtent nearly all over California, but he total acreage away from the outh amounts to only a drop in the ucket. What it may develop into is, n a way, the subject of this discus-ion.

Things to Figure Upon.

When a person considers walnut lanting he has to figure on several hings. If he is in the regular wal-ut district and is fairly certain of he variety he selects, he must ex-ect that the blight is going to hold ack his crop a great deal. He can gure that the aphis is going to hold ack trees and crop a great deal also, ven more than the blight will affect he crop, perhaps, though an attempt o control the aphis by spraying is ow being made. At the same time, n right soil, location, with sufficient noisture, good care and right vari-ties, the planter can rely upon such igorous growth, heavy setting and bundant production that blight, phis, occasional hot spells and other inor disadvantages can easily be en-ured. The wonderful bearing of a ood walnut grove in Southern Cal-fornia is something that prospective alnut-growers elsewhere should con-ider.

And now what of the prospects for uccessful production elsewhere? It s the great central valley of Cali-ornia that this especially deals with, eginning opposite the entrance round Stockton, where temperatures re most moderate, and extending orth and south, wherever suitable ocations can be found as far as fu-ure experience will permit.

The climate is quite a contrast with ts dry, very hot summers, from the oast of Southern California, with ummer fogs and the moderating in-luences of the Pacific ocean, but too nany demonstrations that certain ruits can grow in widely different ections of California make a differ-nce of climate a poor argument gainst success. Valencia oranges, or example, are most noted in parts



The Famous Black Walnut Hybrid at Yuba City.

First Season's Growth of Walnut on the Fitzgerald Ranch.

of the best walnut district, and Valencias are a great success also in the Tulare citrus district, which is a bigger jump than from the orange country to the San Joaquin county climate.

There are very excellent grounds for believing that the Sacramento and San Joaquin valleys, on account of certain features explained herewith, may, with their wide area, contain a far greater walnut acreage than Southern California and as good an acre production also, which would be going some for a fact.

The chief exponent of this idea is Dr. W. W. Fitzgerald of Stockton, and it is largely upon what he has demonstrated and observed that this account is based.

Dr. Fitzgerald started walnut production as a hobby, but has developed it into a systematic study and business. He grew up on a farm in the district and kept up on farm topics. About a decade ago, in traveling over the State, he became greatly impressed with the walnut growing of Southern California, and out of curiosity and natural interest in such things, secured scions from as many of the finest trees as possible and grafted them on the black walnut trees found in great numbers in Stockton. They did so remarkably well that he investigated still further and has become a heavy planter as well as one of the leading authorities upon walnut growing in California.

It has been claimed that walnut production cannot be a commercial success, at least a great one, in Central California on account of spring frosts and summer heat. Walnut trees have been sprinkled all over the valley in dooryards, along streets, etc., showing what they could do, but heretofore people have taken the frost and heat argument as a fact. Recently observation and theory both show that it is ill founded.

Thus far the frost theory has been considered so good that the late blooming French varieties only have been tried as a rule, and these, it is well to know, are quite inferior in production, no matter how well they compare with chance seedlings, to the Santa Barbara softshells of the south. However, upon making a definite trial, Dr. Fitzgerald is believing that fine, tender varieties like the Placentia Perfection may do excellently in the north and bear as heavily as anywhere. However, the Eureka is such a heavy bearer, so high in quality and desirable from several other standpoints, that it probably will make the softshell varieties unnecessary, however well they might do here.

The frost question deserves analysis. There is a great talk about it in reference to walnut growing, but the walnut is the latest tree in bloom. Cherries were coloring this spring when the walnuts were just getting started, and the early and sensitive almonds were far along and well past the danger period. From the experience of ten years Dr. Fitzgerald figures that the walnut is in about as much danger of frost injury in the leading deciduous districts of San Joaquin county, with which he is most familiar, as is the grape. That is, although frost may hurt enough to speak of once in many years, it is a very small factor commercially. A person can thus get as heavy bearing varieties as he wants, with as full production as anywhere, and frost in a real fruit district is a minor problem.

Irrigation Prevents Sunburn.

Another, and possibly the leading, argument against commercial walnut culture in Northern California is sunburn, owing to the very hot and dry summers. In actual fact, sunburn is a thing that counts for little at all, if moisture conditions are kept right, and Dr. Fitzgerald believes that in the milder parts of the big central valley sunburn is less of an injury than it is in the main walnut districts of Southern California. The point simply is this: It is not the heat of itself that causes sunburn and hurts the tree, but the amount of heat that the tree is used to. Weather that would wilt the leaves of a tree growing in mild, uniform climate would be normal and comfortable to a tree having such weather all the season. This fact is well known.

Although it gets hot in interior California, the heat comes on gradually and the tree gets adjusted to it. The main thing is to have the roots well supplied with moisture so that the leaves can always be vigorous and shade both nuts and bark. It is thus a fact that with proper irrigation and cultivation, walnuts in interior California are very seldom sunburned and the nuts have meat of light enough color to make them class, if they are of the right variety, with the budded nuts sold by the California Walnut Growers' Exchange. Hot, dry winds in the southern walnut district occasionally do more damage to the nuts than the hot summers of Central California.

There is a question how far up the Sacramento and San Joaquin valleys the walnut can be a commercial success, for as one approaches the ends of the valleys the heat increases and the danger of sunburn likewise, but certainly with plenty of irrigation sunburn is not a problem in the milder parts. With this statement Professor Smith of the University of California, the recognized walnut authority, is in full accord.

Northern Advantages.

What makes the great central valley of California such a great walnut possibility is the following: There is an immense amount of deep, rich soil of just the kind that walnuts require. There is all the water that is needed. The climate is excellent for growth and heavy production and the absence of summer fogs eliminates the great damage done by the aphis and reduces the danger of blight to a

moderate degree. Let us take these up in detail.

The walnut is a very vigorous grower and feeder and needs a strong soil. It is almost fair to say the heavier the better. Certainly a person is making a big mistake, or falling far short of perfection, when he plants walnuts on a sandy soil or a light loam. Dr. Fitzgerald has an extensive walnut grove planted in alfalfa on genuine, simon pure adobe a few miles north of Stockton. It is an adobe underlaid by the regular yellow clay three feet down or so, but young trees and old time seedling and black walnuts demonstrate great excellence for walnuts. Adobe is rich soil and the yellow clay is fine to hold moisture through long, hot summers.

On account of soil the Sacramento valley is as a rule more of a natural walnut section than the San Joaquin, which generally has lighter soil. However, the San Joaquin valley is perfectly satisfactory where the soil is right and summers not too hot.

Aphis and Walnut Blight.

The two big walnut troubles of aphis and blight apparently are solved by climatic conditions. Owing to the absense of fog, aphids do not occur on walnut trees in San Joaquin county or elsewhere in the big valley and the leaves are clean and smooth, which is a decided argument in favor of walnut culture.

Just as a damp atmosphere encourages aphis, so it does blight. Occasionally trees in valley or foothills may have a lot of blighted nuts, but even where blight is naturally bad a great deal can be done by proper selection of varieties. Theoretically, blight resistance is greatly favored in the interior valley by dry weather, and actually it is insignificant. If the red spider ever requires attention, as it now does on lighter, sandy soils, sulphuring is a cheap and effective means of control.

The almost universal custom in interior California for commercial walnut culture is to plant walnuts in alfalfa. Sometimes peaches are interplanted too.

Walnuts in Alfalfa on Dr. W. W. Fitzgerald's Ranch Near Stockton.

In Dr. Fitzgerald's planting checks are made 60 feet wide and walnuts planted on the levees. The alfalfa pays just like other alfalfa without extra work and opens up the soil, enriching it aboundantly with nitrogen and humus for the time when the walnuts will need all the ground for themselves.

Dr. Fitzgerald's oldest commercial planting was made six years ago and the trees are now good for about 30 pounds a tree, rows 60 feet apart. 30 feet in the row, alternate trees ultimately to be removed. A full crop for the State is about half a ton to the acre, even though seedling trees are overwhelmingly in the majority. With budded trees on satisfactory soil and properly cared for a ton to the acre for mature trees is well within expectation on average groves, while the quality is likewise very much better and higher priced.

A ton to the acre of budded nuts, at 19 cents, as last year, means $380 per acre, and although such estimates are strongly to be discouraged in nearly every instance, this is a reasonable and accurate method of caluculation for walnuts when soil, variety and care are proper. Some allowance may have to be made for price, but the market is excellent with permanent and reliable expectations for its continuance.

The average man will say that since walnuts have not been commercially grown in our great central valley the prospects are strongly against their ever being worth much, which is fairly good reasoning, but not conclusive; likewise, it is a lot easier to figure how fine things could be than to have them so, which is still better reasoning, though not conclusive either; but the facts remain as stated above, that door yard trees have proved excellent in many parts of our great central valley, and that careful and systematic investigation has demonstrated just what theory indicates: that soil and climate not only permits walnuts to be commercially grown, but favors them immensely in definite and fundamental particulars so that it is a reasonable and sound expectation that walnut growing will prove one of the greatest and soundest horticultural industries of interior California.

How far it will go no one will say, as that is a matter of trial, and very fortunately a great number of our Sacramento and San Joaquin valley counties are making systematic tests of the walnut. Even in Siskiyou and Humboldt, to say nothing of the San Francisco bay counties, where they have been in good prospect for a number of years, farmers are awaking to walnut possibilities.

The native black walnut can be found all over the valley in yards and along streets, often rivaling the valley oak in growth and vigor, so even nature invites us to make trial. When commercial walnut culture does come strong, it seems prohable that it will be important in the foothills as well as in the valley. The walnut is a native of interior sections. It will have to be a wonder to surpass present productivity of our Southern California coast counties, but California climate is good enough to have walnuts thrive in many sections.

Co-Operation a Cure for High Cost of Living

—By C. Knox, Mendocino County—

Like stocks listed on a stock market, the cost of living will fluctuate up and down and be temporarily determined by political and business conditions, but as long as we progress, personally and as a nation, the cost of living will continue to rise.

To check this rise from increasing beyond the limits of prudence and safety is the end in view, and the means to this end is simple. Nothing more than co-operation between individuals organized into associations. The seed has already been sown. There is at the present time many hundreds of co-operative associations established throughout the rural districts of the country. Farmers' clubs, stores and granges are numerous and are operating successfully from every standpoint and are being extended in every direction. These aid in the education and amusement of the farmer as well as in lowering the cost of living, and already are saving thousands of dollars annually from the cost of his supplies.

There have been, however, many efforts made to secure direct markets in the cities for the produce of the farms. These efforts have mostly failed. The reasons are obvious. The city consumer wants to see and select his goods personally. When they do not suit him he does not buy and he buys only what appeals to him, willing to pay the higher price for satisfaction.

[Our own observation is that the city consumer buys over the phone rather than after personal inspection, but never mind, it is not fundamental to this discussion.—Editor.]

If he wants a turkey for his Thanksgiving dinner he goes to his market where he can have his choice of hundreds of birds and gets just what he wants, and satisfaction. If, however, he sends his order direct to the farmer he must accept just what the farmer sends, has no selection beyond the single bird that arrives, and it may happen that, though the farmer may have a reputation for the turkeys he raises, some particular year his flock will not do well and will be in poor condition or below the average. Here enters the problem of selfishness that must be overcome, the spirit too prevalent in Americans, the "get all you can" spirit. To keep his turkeys over until they are ready for market would mean that he would lose his trade, temporarily at least, and rather than do this, which would mean the payment of a commission to a middleman, he ships poor turkeys to his customers and then wonders at the complaints that come in. The result is that when the customer again purchases a turkey he goes where he has a choice and gets satisfaction.

[This is true, the consumer wants only good stuff and the farmer selling direct too often fails by trying to put in poor stuff or grading loosely. To succeed in direct selling only the best goods and best pack go.—Editor.]

Again, we have the problem of price to consider. To pack produce for private trade is more costly than to pack quantities for wholesale trade. The packing, weighing, marking and shipping of many small packages mean added expense and labor. The farmer, then, to secure an advantage in shipping direct to the consumer must secure a higher price than the same goods sell for in the city's markets, while on the other hand the consumer in the city to secure an advantage in buying direct from the farmer must secure the goods at a lower price than he can buy for in the city's markets. Good quality alone does not assure trade, as it is possible to secure the very best produce in the markets of the city.

The direct trade problem is further aggravated by the necessity, on the part of the consumer, of purchasing money orders to remit to the farmer before he receives the goods. This is troublesome, costs money, and is contrary to the usual custom of the city consumer of "seeing before paying." True, the plan proposed by the Postmaster General of having the parcel post carrier collect the price of the goods at the time of their delivery is meant to overcome this difficulty. But then will arise the necessity of the consumer being at home at the time of arrival of the goods, of having the money in the house at that particular time, or of being inconvenienced in some other manner.

This will particularly apply to the well-to-do who are not accustomed to being in a hurry to pay for the goods they purchase. On the other hand, if the farmer gets a high price for his produce it will be only from this class of people. He will then be obliged to carry accounts and this average farmer cannot do, but if he does, he will be obliged to have some one in the city to make collections for him, for here again we encounter another difficulty in the fact that many people, both in city and country, belong to that class of society known to the trade as "Dead Beats." These human vultures, living off other people's industry and enterprise, change their trade from one store to another, wherever they can secure credit, leaving their old accounts to be paid by honest cash customers, for the amount lost in bad credits must be added to the price of the goods sold. These people would howl with delight at the opportunity opened for the practice of their dishonesty by the farmer engaging to carry accounts.

It will be seen, then, that direct trade between the farmer and the city consumer is almost an impossibility. There is, however, a method which can produce most beneficial and satisfactory results to both parties and eliminate all the obstacles presented by direct shipping to the consumer, and the aid of the government should be given to educating the city consumer in the methods of co-operation now being practiced in the rural districts of the country.

With the establishment of co-operative mercantile societies in the country well under way all that is required to promote the interests of both farmer and city consumer is to establish co-operative mercantile societies in the cities to supply all the necessities of the city consumer. This would extend not only to farm produce but to wearing apparel, hardware, household goods and everything required by the city family.

Then with these co-operative societies established in both city and country the end desired would be attained simply by co-operation between the two, the cost of living would be kept down to a minimum and the middle man would become a shade of the past.

(We would sooner bet on the endurance of the middleman than of the mercantile societies, for the middleman is a necessity, though often an evil. The more unnecessary he can be made through co-operation or otherwise, the better for everybody. Co-operative mercantile societies are a fine suggestion, but it's a man's sized job to get one of them to run properly.—Editor.)

Intensive Pork Production for California

By W. M. Carruthers

may be urged that the consump- of pork on a large scale is not eral in California, but surely the t amount imported from the East roof that the supply of pork is commensurate with the require- ts of that large and increasing ulation which eats and appre- es pork. The scarcity of hogs not be due to the inability of the k men to handle them properly, he stockmen here are generally equal of those in any part the country. It is, therefore, onable to assume that if we e to devote as much time and at- ion to hogs as we do to cattle sheep, an equal amount of suc- would attend our efforts.

is, of course, natural that each d should have its admirers and noters, who urge its excellence adaptability. The four standard eds of pork hogs are: Poland na, Berkshire, Duroc Jersey and ster White. The Essex and npshire hogs are also classed as k hogs, but they are not as nerous as the breeds enumerated ve.

he development of the Poland na breed to the high position ch it has attained among the pork eds is not due to the efforts of one man, but is rather the result many. The refinement of this d, or rather certain families of it, g certain lines has been carried far, and the breeders who have n responsible for this have been erely criticized for diminishing size, vigor and prolificacy of these s, but this tendency has been ost entirely overcome by more lligent management.

While the Duroc Jerseys may not e reached the heavy weights of over-grown specimens of the and China or Chester White eds, they are so nearly the same as to be properly classed as e hogs, and will undoubtedly pro- e as much pork in the same th of time and on the same quan- of feed as swine of any breed. y are prolific, rear large litters, are of a quiet and peaceful dis- tion.

he Berkshire has many good lities and where excellent graz- is available he more than holds own as a feeder and pork raiser. he Chester White breed has been cribed at length in the May num- of Orchard and Farm. The Tam- th and Yorkshire are bacon er than pork hogs.

he chief consideration of the be- ner in hog farming is the selec- of the boar. It is absolutely essary that the herd boar should as perfect a specimen of his breed it is possible to obtain, for the son that during his life he may be sire of hundreds of pigs, whereas sow will only produce a limited ber during her lifetime. If the r is good enough to improve the dard of the herd his value as a eder is unlimited. Careful atten- should be given to the blood s of the sire. He should be what known as an intensive breeder, one e to reproduce himself and im- e his get. The disposition and d behavior of the herd boar de- d a great deal on how he is dled from pighood to maturity.

n the selection of a brood sow as foundation for any breed, the stion of markings is of no im- tance whatever as compared with necessity of getting a sow true type and of good quality and con- mation. Of course, the question of rkings will not arise where breeds solid color are kept, such as the ester White, etc., but among the

A Prize Carload of Pork Hogs at Portland Union Stock Yards.

breeders of Berkshires, Poland Chinas and Hampshires one often comes in contact with one who is more particular about fancy markings than there is any necessity for. A perfectly marked Berkshire sow bred to a boar who is also perfectly marked will not always produce a litter that is perfectly marked. A sow or a boar with one black foot, a black switch or a white splash on the jowl or arm will not produce a litter that is all marked like the sire or dam. The nearer the litters come to being perfectly marked, the more pleased is the breeder, but in the selection of foundation stock, conformation, size and quality should be the first and chief considerations, and markings the second.

Brood sows should have a dry, warm place to sleep and but few in number (not over ten or twelve) should be run together or allowed to sleep in one compartment, so as to avoid their crowding or piling up too closely.

The future of the pig depends much, in fact, more than is usually realized, on what the dam receives in feed and care before the birth of the litter. "A litter well born is half raised," and there should be no immediate change in the feeding formula for a sow having just farrowed a litter of pigs from what she has been getting during the period of gestation, but after farrowing the sow should be kept for twenty-four hours without feed, having as much water as she will drink, after which she should be given a very light portion of the same feed which she has been getting. If she has been fed a dry feed it would be well to use the same proportion in the mixture, but feed it as a slop. The feed should be gradually increased as the litter is able to take all the milk furnished by the mother. Usually at the end of one week, if the litter is an average sized one, the sow can be fed all she will eat up clean.

By the time the pigs are three weeks old they will eat a little on the side from the trough with their mother, and if it is desired to push them to the limit in growth, a small feeding space can be arranged so they may feed from a very low, shallow trough by themselves unmolested by their mother and getting the same food as she has.

During the period of the early life of the litter it is necessary that the sow and the litter should have plenty of exercise each day or they will become fat around the heart and die of what is known as "Thumps," which is nothing more or less than fatty degeneration of the heart and is due to lack of exercise.

As weaning time approaches, which should not be earlier than ten to twelve weeks, the feed may be lessened for the sow and more given the litter, so that the sow will gradually give less milk and have no trouble when the pigs are taken away entirely.

The correct weights for pigs of different ages is a very difficult subject, as there is no iron-clad rule for governing same. A litter of pigs from a sow that was a poor milker would not grow out at weaning time nearly as heavy as a litter the same age from a sow that was a good milker. Neither would either of these litters make as many pounds at the same age in the hands of a poor feeder as in the hands of a good feeder. Much will also depend on the inherited ability from the sire and dam. Even different individuals in the same litter would differ in weight at a certain age if each was fed by the same man on the same ration, so that it seems that not much information can be given along this line, except in a general way.

One feeder who is particularly interested in making as large pigs as possible will take a litter of pigs from a sow and he can make them weigh as high as 225 lbs. each and possibly more at six months of age. He may take another litter and with the same care and ration fail to make even 180 lbs. each at six months of age. Another man may take the same two litters and feed them and not make over 100 lbs. each on one litter and 125 on the other, so that we really cannot say what a pig should weigh at a certain age, on account of the many conditions to be taken into consideration.

Inbreeding is one of the surest ways known to establish permanent type in animals, and has been from the time of the early history of improved herds of swine, as well as all other domestic animals. It might be said that it is nature's way of reproduction among animals and all living things. A man of wise judgment can inbreed even to a great degree by being extremely careful in his matings and always seeing that no female with a marked weak point in her make-up is ever mated with a sire with the same weakness. In other words, the matings should be of two animals of similar blood lines, both strong and well developed, in their general make-up. In this latter case the produce should be an improvement on either sire or dam, and yet there will occasionally crop out an inferior animal or two in the offspring, which should be immediately discarded as a future reproducer of its kind. Herds would be improved to a great extent if this rule was practiced intelligently, but woe be unto the practice of indiscriminate inbreeding.

Line breeding is somewhat similar to inbreeding, but is not carried to as great an extent. It is the mating of animals along similar blood lines on the part of both sire and dam with occasional out-crosses, that is, a cross of different blood lines but of the same type, a little farther back in the pedigree.

Cross breeding, strictly speaking, is understood to mean the mating of two animals that are of pure breeding but of different breeds, as crossing a Berkshire boar on a Poland China sow, or any other of the pure breeds bred together. Cross breeding from the feeders and farmers' standpoint produces in the first cross a very superior feeding animal, often the produce being better for pork purposes than the pure bred, but it must stop at the first cross; by further crossing the animals deteriorate and the result is the reversion to the scrub. It is not generally a good plan to do any cross breeding except for experiments or special results in the first cross.

In the case of pork the chief requirements of the consumer are: flavor, tenderness or quality of meat, size of joint, plenteousness of lean and sparsity of fat, with as little bone and waste as possible. It is very fortunate for the breeder and feeder that fat hogs which supply all the requirements of the consumer can be produced at less cost, and with greater ease than the large, coarse, heavily boned hogs which require the better part of one year to fit them for slaughter.

Some Pacific Coast Pork Hogs of the Right Size and Finish.

The Financial Side of Cotton

Cotton is getting to be one of the biggest things in the Imperial valley, as most everybody knows. The ways of growing it will not interest many persons, but some peculiar little financial features connected with the industry will do so—there are too many peculiar things about selling farm products.

Cotton in one way is an excellent product to handle, for the grower knows just what it is worth at all times and can sell it at full price, or borrow money as he wishes. The average quality for the country during a season is determined and all grades decided upon. Then there is definite quotation every day on each grade, and a man can have his cotton graded any day and sold. This is very satisfactory and it would be fine if every farm product could be sold as easily and fairly.

Owing to dry, clear air, Imperial valley cotton is very white and the fiber of high quality. At first the buyers made a reduced price to offset the difference in quality, but the growers found out that the difference was all in favor of their cotton and it now averages $3 to $5 a bale over ordinary Southern cotton. The buyers of farm products sure are great people

The cotton is hauled loose to the gins and is drawn out slowly by suction into the gins, of which several are operated in series. The seed is removed here and cotton baled. About 500 pounds of lint are in a bale there being 250 pounds of seed for that amount of lint. This seed is either taken away by grower, or left at the mill and he is paid $15 per ton for it. The seed does a little less than pay for cost of ginning, including burlap and hoops used on the bale.

In order to do anything with cotton it is necessary to have enough to operate a gin and the first gin was started by a number of growers who saw that cotton had possibilites and were willing to erect the gin to give it a start. After cotton growing got on its feet private gins were started and the original plant was seen to be so good that the stock gravitated to few hands and as a result every gin in the valley is owned and operated by private parties. The only growers' organization is the Imperial Valley Cotton Growers' Exchange at El Centro which grades and sells cotton for members at $1 per bale, finances cotton growing for members, etc, and otherwise exerts a very valuable influence on the cotton industry.

Where some of the peculiar features come about is in the handling of the seed. This, as said, is valued at $15 per ton. Several things are done with it and the price of various products appear to be badly porportioned to the price of the seed itself. The seed coming from the gin is covered with short lint which the gin cannot remove. Then is a very thin shell, or seed covering, and underneath is the meat, which is rich in oil and otherwise very nutritious, containing lots of protein. The seed is highly thought of by dairy and stock men and it goes fine with alfalfa

The first thing in the manufacture of the seed is to take off all the lint possible. This is short and low-priced, said to be worth about three cents a pound, $60 per ton, or four times the cost of the seed. It is said about thirty pounds of this lint can be recovered per ton. Even then a good deal is left on the hulls.

Then the hulls are removed, but they are not waste by any means, though the least valued part of the seed. They are sold for $7 per ton as cattle feed, or nearly half as much as the whole seed. Offhand one would say that either the whole seed is held too cheap or the hulls too dear, though the hulls make good feed.

The remainder is cooked and then pressed to remove the oil. The oil, of course, is of high value, but there is so much more cake than oil that the cake from a ton of seed is worth more than the oil obtained from same. Besides, the protein in the cake, quite a bit of oil is left in it, which makes its food value still higher. This cake is sold for $28 per ton

Thus from seed held at $15 per ton is obtained oil and lint, each worth several times as much by weight as the seed itself; oil cake sold at nearly double the price, and the only thing of less value is the hulls, which sell for nearly half as much.

The average yield is something less than a bale to the acre, this average being greatly reduced through late planting, poor care and irrigation, insufficient preparation of the land, inexperience and other natural consequences of carelessness and of attempting to farm too much land. Yields of two bales per acre are not infrequently obtained and this is a very reasonable standard to work to. The total cost of production on a bale an acre basis is $35. A bale of good cotton sells at about $65 or $70. Thus there is no wonder that cotton is popular.

Cotton can grow finely over lots of California. Labor for picking has been the stumbling block in production, but this is well attended to in the Imperial valley. As there is a very long picking season, it simplifies matters a great deal.

Although cotton is grown all over the valley, it is most popular on the Mexican side of the border, owing to our Oriental exclusion law. Many Chinese live near the border, possibly looking for a chance to get over, and these cut wages so that the cost of picking cotton on the Mexican side is just half of what it is in California

Progress at the State Insectary

One of the biggest parts of California fruit production is the control of insect pests, so that the fruit may be of as nearly perfect quality and the trees as thrifty as our climate makes possible. The State Insectary at Sacramento, as a part of the State Horticultural Commission is an institution given over more definitely to insect pests than any other State institution and so its work should be of definite interests to fruit growers, and to all farmers, for that matter. The Insectary has always been active and competent and especially good work appears to be in progress now.

The work of the Insectary is particularly with beneficial insects, that is, with insects that are a benefit to the State by eating or otherwise destroying injurious insects. Devising control measures like fumigation, spraying, etc., is out of the line or work altogether. That is for the State University or some other institution, or for other parts of the State Horticultural Commission, if it takes it up at all.

The work with beneficial insects by the Insectary is of two kinds: One, work with beneficial insects already established in California; the other, the introduction of insects not found in California. The Insectary is drawing away from the first kind of work somewhat and giving special effort to securing valuable insects not now found here, and establishing them in California. It is not expected that more than a very few of our most injurious insects can be subdued without effort by the orchardist, but it is hoped that some serious pests can be checked a great deal by finding the right insect enemies to attack them. Every undesirable insect has its enemies and it is worth while helping those enemies along all possible. Perhaps only one in fifty of the insects imported would prove of definite high value, perhaps none, but it is worth trying.

Most every fruit grower knows the cottony cushion scale, which threatened to wipe out our citrus industry, was itself almost wiped out of existence by a ladybird, vedalia cardinalis, imported from Australia to fight it. Something like this can possibly be done against other insects. Some vedalia is always kept on hand now at the Insectary, to be sent on request wherever the cottony cushion scale is found.

This Insectary has received insects to prey upon injurious insects during the past year from South Africa, Japan, the Philippines, the West Indies and elsewhere. H. L. Viereck, a very capable entomologist, is at present in Europe, attempting to secure parasites for all of our serious scale pests. A Japanese entomologist is also employed to obtain as many insects from Japan as possible to work against the mealy bug and other insects. Many other insects are being secured from special correspondence elsewhere.

One of the most hopeful prospects is against the black scale from South Africa. The black scale can hardly be found there, it is so well under the control of native insects, and infected scale are being imported in cold storage and parasites bred from them. One of the insects obtained attacks the scale in its younger stages, before it has an opportunity to lay eggs. As the parasites we have now attack after the laying stage, the new importation gives very hopeful prospects though it is too early to say for certain that it will actually prove satisfactory here. Another parasite of the black scale that works like the scutista has also been obtained. As control measures on the black scale are more than control against any other insect pest, hopes that some of the beneficial insects will greatly control the black scale are held. Some of Japanese parasites against the mealy bug are also held.

Commissioner A. J. Cook is quite hopeful that the Calosoma, a large beetle that attacks the destructive gypsy moth in the East will do execution against our caterpillars. Some have been secured and devour our caterpillars greedily, but they are not be freed until they are bred in large numbers.

It is the policy of the Insectary to wait until strong colonies can be obtained to give them the best possible chance to become well established rather than sending them out too soon, or too few to permit surely and satisfactory reproduction. But delay a little longer than absolutely necessary, it is thought, than will much work by distributing new parasites too soon.

In spite of specializing on new parasites, much work is still done in distributing beneficial insects already in California. This year, for instance, 70,000,000 hippodamia convergens, our native ladybird were sent out, double the number used two years before. A still greater amount will have been obtained, only the early of the season brought them out of winter quarters too soon. A large number go to the Imperial Valley melon fields. This year quite a few were sent very early, hoping that they would become established and reproducing vigorously on barley aphis, therefore very numerous before the melon aphis developed strongly, but it is too early yet to obtain definite results. The Insectary is under the able management of Harry S. Smith who is assisted by E. J. Vosler and J. Brannigan.—D. J. W.

Rules for Farm Labor Camps

Through the riots and killing of public officers at the Wheatland hop yards last August the matter of accommodations for large amounts of farm labor during short periods of time has become a subject of wide interest in California and discussion throughout the country. Therefore a bulletin issued by the Commission of Immigration and Housing of California, whose executive secretary, C R Parker, made an official report on the Wheatland riots for Governor Johnson, is of great direct interest to many large scale farmesr, and equal indirect interest to all California farmers.

If accommodations for short time labor are not what they should be, California farmers want to make them right. If they are as they should be, it will be of great help to the farmer to have official approval of the accommodations in case professional trouble makers try to cause riots without justification Therefore in several ways these regulations promulgated by the Commission are of high value The Commission has inspectors out who will help in planning labor camp accommodations. If the regulations as stated appear in any case unreasonable, it is certain that they can be altered, and it is unlikely that all the regulations will be thoroughly satisfactory on first issuance by any commission.

A person directly interested can get these regulations complete by writing to the Commission, 525 Market street, San Francisco, and the following is simply a summary of the most important features.

The larger part of the bulletin is given to matters affecting fly control —"Swat the Fly!" This includes the subject of toilets and fly screens. The cook house and dining house must each have screen doors and windows and be as fly proof as possible.

The essential feature of the toilets is that they must be fly proof, so as to prevent flies from carrying typhoid and other bacilli from human excrement and spreading the infection. The toilets must be of tight construction and all windows and other openings screened The seat cover must be arranged to fall when the seat is not in use and a box of ashes or dry earth provided to cover the excrement after using. Paper must be provided, also urinal trough for each toilet.

A rather striking rule is that "There must be sufficient toilet accommodations to afford one hole or seat for every ten persons," while one of the recent I. W. W. proclamations only demands one seat for every 50 persons.

Receptacles must be provided for garbage and these emptied daily. The garbage must be burned in incinerators, buried, or fed to hogs, not to chickens.

Manure from horse or cow barn must not be allowed to accumulate.

Bathing facilities, such as shower baths, tubs, or stream, must be provided, warm water being necessary for winter.

Various other requirements for drinking water, towels, etc., are made which need not be stated here. It is also stated that "At least one man should be employed in each camp to devote his entire time to keeping the camp clean." Persons violating the camp sanitation act are open to a penalty of a $200 fine, or a 60 day imprisonment or both.

The United States is not the place where a crop occasionally It is reported that Italy will no more than a 50 per cent yield olives this year.

"Orchard and Farm's" Tractor Demonstration

One of the Rumley Machines Operating With Wheel Extensions.

If a person expects to find any ritten report what tractor or tracrs made the best showing at the eat farm power demonstration held der the auspices of Orchard and rm at West Sacramento May 7 to he will be disappointed. It was a monstration, not a contest, and ere was nothing in it like a contest. ny comparison of machines had to in the visitor's own mind and unded upon his special needs, and ssibly his individual taste. As a rviceable and profitable demonstrain it was an extreme success from e attendance and from the viewint of both the thousands of visrs and the tractor men.

Each tractor pulled the plows, harws or ground-stirring tools that it w best, or with which it could demstrate its effectiveness. They were t deep or shallow, or any and every her way that would best demonrate both the proper handling of the ols and the quality of the tractor. ch methods proved the most highly vantageous for the visitors inspectg tractors and tools of any that uld be used—far more profitable an mere attempts to see how much ound could be turned over or ussed up.

Site of the Deminstration.

The site of the demonstration was the west side of the Sacramento ver, just below Sacramento and thin 20 minutes' ride from the nter of the city. Many came from cramento on the Oakland, Antioch Eastern, which ran special trains to e temporary tent town where the monstration was held. Many hunreds of others came in their autoobiles and others came down from e headquarters of the West Sacraento Land Company, just over the idge from Sacramento, in autoobiles of the company.

The land itself proved excellent for e purposes of the demonstration, beg reclaimed tule land sufficiently bdued to provide good plowing and t sufficiently unsubdued to make a ir, hard test for plows and tools. In 13 the land was broken and plowed ep. Second year tules still were undant, but had been cut and in ost places burned, though occasionly abundant enough to be a little oublesome to some kinds of tools.

The land itself was smooth and vel, the soil heavy enough to give the actors sufficient work to show their erits and damp enough to be nice owing. Once in a while there was a w spot rather boggy that served the rpose of demonstrating just how ell the tractor could do in a tight ace. Perfect weather marked the hole demonstration and both exhitors and visitors were greatly eased with methods and results.

Practically all the work was done in en field, for both large and small actors, although some plowing and cultivation was done by several of the orchard tractors in one of the pear orchards a little nearer Sacramento for the benefit of those who wanted to see tractors and tools actually at work under orchard conditions. On account of the great assemblage of machines it gave an opportunity for investigation of makes impossible in any other way than by going from one tractor and tool agency to another at great expense of time and trouble. Persons intending to purchase tractors came from as far off as the Imperial Valley and from other States, just for this purpose.

The First Time Round of the Bacon Baby Tractor.

If you ask just what good the demonstration did, it can be said that it showed hundreds of people possibilities of tractors that they did not dream of before. They, perhaps, had seen tractors at work without thinking much about how that work was done, or the different conditions under which it could be accomplished. They came and saw nearly two dozen tractors at work side by side, with all sorts of tools, and put through their paces as a horse would be before purchase. Tractors became for them something of live interest rather than a subject of which they thought little and cared less.

A great many persons came especially to the demonstration for the sake of deciding upon what make of machine they would take. Very many others who had not intended to purchase tractors developed that intention at the gathering. The attendance was from all parts of the State, and very naturally all of those who came any distance came with the deliberate intention of learning what they could about tractor makes, tractor methods and tractor possibilities.

The manager of one of California's largest and best conducted ranches came to the demonstration with several of his men to investigate types and to have the men get new ideas of plows and other tools, of the most effective hitches, ways to set the plows and such things, then returned and sent down another set of men to learn what they could.

There is considerable knowledge to be gained frequently on proper lubrication, proper starting and stopping of the engines and such matters, and a good many persons owning tractors came to learn what they could along those lines.

A tractor would start down the field attended by a good audience, most of which would drop off before long to discuss tractors and such things until its return up the field, and down where there were not many onlookers the demonstrator would let a visitor run the machine and show him things he wanted to know. Then as the tractor returned to the bulk of the crowd the demonstrator would usually take control again and come back making the best kind of a job, so as to make a good showing. Very naturally, the more demonstration, the poorer the appearance of the ground as a rule, though some outfits plowed straight on and raised their plows or changed the depth of cut, etc., only on the turns.

Many Tools Shown.

Some tractors pulled mold board plows, others disc plows, others disc or other cultivators, subsoilers, scrapers or some of the numerous tools used for the demonstration. As a demonstration of soil-stirring tools, the meet was as much of a success as a tractor demonstration. In fact, a considerable encouragement to the tractors came just from the demonstration of the efficiency of the plows and other tools used behind them and the efficiency of the tractors in moving them and turning the ground over. The amount of work that the small tractors could do was surprising and the amount that the large ones could accomplish more surprising.

As stated in the announcement, there was an official examination of all fuels used by F. L. Peterson of the Department of Farm Mechanics at the University Farm School at Davis, making the tractor tests come under exactly similar conditions to those found on the farm.

Leaving out simply the pulling power of the various tractors, under favorable conditions, what could be done in other ways was surprising to many observers. Of course, a tractor can go over good, solid ground, but the way they walked over plowed ground, spongy ground and boggy ground showed them to have working ability frequently unexpected. The tractors running on a belt, or a flat surface, are supposed to do excellently on soft ground, and the round wheel tractors, large and small, through design of wheel, extensions or otherwise, showed an ability in this line that was excellent.

Nice Handling.

The quickness of turning and flexibility of the machines was another thing that caused remark. One machine assembled crowds whenever it saw fit by turning in its own tracks as if it were on a pivot, and turning in a hurry, too. Quite naturally, this could not have been done with a plow behind, but it showed a facility in turning that was as good as any plow or other tool could stand, and the same thing was true with practically all the tractors there. Even if they did not turn in their tracks, they turned as short as was needed. This point is naturally one of the greatest features of the small, or orchard tractors, demonstrating their ability to plow right up against the trees and to turn as abruptly as there could be need for in coming up one row and going down another.

For low labor costs it was a surprise to many to see how, with certain plows, one man was all that was needed to run the tractor and attend to the plows also, on turns as well as in straight plowing. There were fine things to see about automatic plows, easily adjustable plows, and many other points affecting both plows and other kinds of ground-stirring tools.

Tractor Leveling.

The gigantic engine scraper made by the Schmeiser Manufacturing Company that moved seven yards of dirt at a time, for example, attracted lots of attention, especially when at work behind a Holt Caterpillar moving sand near the West Sacramento offices. The way the caterpillar moved over the loose sand with total indifference and disregard, just as if it were solid road, surprised those who did not know the effectiveness of the belt method of movement.

Soil moving with small tractors was shown with the Sulky Revolving Bowl Fresno scraper.

In fact, there was an immense amount of demonstration, both of tractors and of tools which they could draw. In some cases nicer plowing might have been wished, say of grain stubble. In other cases very difficult land to handle was rather wished for in spots, so that the efficiency of both tractors and tools could be shown.

Some Attentive Observers of a Yuba Ball Tread Tractor.

Taking the land and the demonstration as a whole, conditions were almost ideal, for land and soil was good enough to make nice working without being so nearly perfect and easily handled that it would leave the observer think that everything was too easy. It could hardly be expected that one piece of land would be ideal for all kinds of plows and all kinds of cultivators and all kinds of tractors, but the land showed clearly just what each tractor and each tool would do under all kinds of conditions.

The tractors and tools were unloaded from the Oakland, Antioch & Eastern on a specially-built platform something over a quarter of a mile distant from the field and proceeded at once to their stations. Headquarters were at a junction of concrete paved highway and cross road. Tents of Orchard and Farm, of the different tractor, tool and oil companies were at this junction, also large tent where lunch and soft drinks were served by a leading Sacramento lunch company, and other tents in which visitors could rest.

West of the concrete highway and on either side of the cross road the tractors were located on long, narrow ten-acre strips, all of which they plowed before the close of the demonstration with tools of their own choosing.

The Final Procession.

On Saturday afternoon, when the demonstration closed, before an audience of several thousand, all the tractors lined up on a reserve strip and proceeded in impressive state down the field, leaving perfectly plowed ground behind them. Permanent record of this procession has been left in photographs and in several films by moving picture concerns. The tractors, great and small, stood in line side by side and when the signal was given the first started its stately course southward. As it advanced a few feet so that the observer on one side could get full view of the next outfit, that started, and so on until all machines were proceeding in impressive procession down the field in uniform, diagonal line, closing the greatest demonstration of tractors ever held west of the Rockies and one of the greatest ever held in the world.

Moving picture men state that this film will prove one of the most popular and most valuable in the United States to-day. It will be shown not only in all parts of California, but all over the United States and prove a great advertisement to California and to the tractor industry.

This film is to be one of the big features of the next State Fair, being planned by the State Agricultural Society as a necessary supplement to the tractor department, for through it the visitors can see the tractors at work, as well as simply at rest or moving over hard ground. At t Panama-Pacific International Expo tion in 1915 this film is to be used the same way. It will also be us by the Sacramento Valley Develo ment Association in advertising t Sacramento Valley.

The demonstration was everywhe felt to be a spectacular success a Orchard and Farm has been urged make the affair an annual eve which will be done. A very f tractors offered for sale in Californ were unable to enter for some u avoidable reasons, all of which w be on hand without fail in 1915. number of soil tools were not hand, including ditching machines a other large apparatus, as well as c tivators, etc., that will be present 1915, and the proved success of th demonstration will bring to whate place is chosen for the demonstrat a crowd hat will even greatly surpa the throngs attending this gatherin

One of the Holt Caterpillars Pulling Eight 14-Inch Bottoms.

Investigating a Samson Sieve Grip Tractor and Killifer Mold Board Plows.

Leading Features of the Tractors

As we remarked in another place, the great farm power demonstration was a demonstration, not a contest. If tractors were simply pulling machines for solid, open spaces, there might be some grounds for a contest, but when there are tractors for grain fields and tractors for wet adobe, large tractors and small tractors, tractors with round wheels and tractors running on a belt, tractors with one feature emphasized and tractors with another special value altogether, the basis for competition gets less and less until it almost vanishes. Every machine there was excellent along the lines that it was meant to serve best and the best thing that can be done for the person interested but unable to attend the demonstration, is to point out the one feature which the manufacturer or distributor wished to emphasize most fully. Even that will ignore important features of every machine, but full details are impossible.

The machines themselves fell into several different groups. One of the leading types was of the machines that run upon a belt, or upon a track which they themselves lay. These are the C. L. Best Track Layer, the Caterpillars of the Holt Manufacturing Company and the Ball Tread machines of the Yuba Construction Company. The big talking point of all of these is the fact that they run on a flat surface, that they go over sand and soft ground without extra work for the engine and that they do not pack the ground.

Best Track Layer.

The special feature of the C. L. B. Track Layer that was emphasized aside from the track is the frictionless rocker joint which prevents wear on the track and makes a very efficient use of power through this reduced friction. The steel gears and cases enclosed and run in grease was another strong feature brought out. The track layer pulled a John Deere mold board plow cutting 140 inches.

Holt Caterpillars.

The Holt Manufacturing Company had a large and striking representation, both with tractors and tools. There was one 75 horse-power caterpillar, two 60 horse-power caterpillars and the 30 horse-power or baby caterpillar, all pulling tools manufactured by the Holt Manufacturing Company except that one of the 60s was used to demonstrate both its own effectiveness as a tractor in loose ground and the value of the Giant Engine Scraper in moving loose sand dredged from the Sacramento river.

The 75 horse-power caterpillar pulled eight 14-inch bottoms of the Holt mold board plows. The 60 horse-power caterpillar was used to demonstrate itself and a Davis disc gang plow. The "baby" also pulled a Davis gang, showing in addition to the known caterpillar characteristics that it had so much power that with a good gang plow and a middle hitch which would give no side draft, it could cut more than its own width and still travel on solid ground. In addition to this its effective turning power for orchard work was demonstrated.

Among the tools which the Holt Company had and demonstrated were the wood frame mold board gang plows, so constructed that the user could make his own repairs easily and inexpensively, the first cost being low also, owing to the wooden frame The fact that parts of the disc plows were easily replacable was a feature of that type of plows. A double reversible disc harrow cutting both ways and leaving the soil finely pulverized was one of the cultivating tools shown.

Yuba Construction Company.

The model 12 and model 18, Yuba Ball Tread machines represented types of small tractors running on a continuous belt, with the accompanying advantages of little packing effect and ability to go over soft ground easily. Although the "ball tread" method of belt mechanism was one of the leading features demonstrated, their main claim was possibly "maximum power to the cubic inch of mechanism." The compactness for t power developed made orchard wo a feature, as did extreme flexibility movement, the machines being able turn in their own tracks. Model develops 18 horse-power at the dra bar and Model 12, 12 horse-powe They pulled, among other tools, Ber cia Hancock disc plows.

Round Wheel Tractors.

As is usual, round wheel tracto turned out in greatest numbers, var ing in size from the most massiv powerful machines in common use the small, refined orchard tractors th resembled more in design an aut mobile than their large relatives. the size of these machines lessened a rule, special features developed type of wheel and otherwise, until t wheels of the small orchard tracto owed their tractor effectiveness a weight-carrying capacity more uniqueness of design than to actu bearing surface.

Fairbanks-Morse Machines.

The Fairbanks-Morse Compan with their 30-60 machines, were one the two companies showing the rou wheel tractor in its largest and m typical characteristics, having also 15-30 machines, coming more in t medium size class. Cheapness of ope ation and durability was the speci characteristic emphasized, as show in the following points: The f is of the lowest grade, or stove o costing about 3 cents, or much bel ordinary No. 1 distillate. The eng also is slow speed and long strok giving continuous and steady wo with little if any stoppage, and ye of operation. No carburetor is us in developing the power. Aside fro engine and transmission, the rest the machine is built for durability a with the idea of making repairs u necessary. This and low fuel co were the features of both the 30 a 15 horse-power tractors.

The Rumley Products Company al

The Case Tractor and Self-Lift Plow, a One-Man Outfit.

ne of the large size big wheel s, of durable construction and nical operation, likewise a me- ize tractor and a small orchard , the "Toe Hold," thus having y, powerful machine, a medium nachine and a small, compact, e orchard tractor. The latter, rse, is different in fuel and de- rom the two larger machines. of the two big "oil pull" ma- burned 32 degree oil, or one of eapest fuel oils. The engines he Rumley carburetor, which at the right mixture of fuel and nade, insuring the most effective nsumption without dependence he operator. The oil cooled en- s another important feature of achine, especially in hot, dry cli- where rapid evaporation of occurs.

big Rumley machine pulled a y gang plow, eight 14-inch bot- which was something of a fea- tself, owing to the simplicity hickness with which the plows be changed for varying depths or for various types of soil.

"toe hold" feature of the d tractor shown by the Rumley ny was one point brought out, its compactness, flexibility in nent and in working close to the The low speed engine, with few g parts and consequent small

A Fairbanks-Morse Machine Operating on Stove Oil.

"General Purpose Tractor." It is so lightly built as to be carried on springs, to give excellent wearing qualities. Closed engine and gears likewise mean lasting qualities and the auto steering device, joined with other features, as points to be demonstrated.

Case One-Man Tractor and Plow.

The J. I. Case 40 horse-power gas tractor was the third outfit where only one man was needed, there being a on the draw bar. One pulled two 14-inch Killifer mold board plows 10 and 12 inches deep, the other five disc plows. One of these machines also worked with a Killifer heavy duty cultivator in the pear orchard and with a revolving scraper, also the Killifer subsoiler.

Golden Gate Tractor.

The Golden Gate tractor was another orchard tractor, being a recently designed machine. With a 25-horse-power engine and 10 horse-power at the draw bar, its leading feature was light weight, largely obtained by the traction wheels, which, with their special design, are of very moderate size, though it is claimed that they also show excellent capacity for going over any land on which a horse can travel. There is almost equal weight on each of the four wheels, enabling auto steering methods to be used, with consequent simplicity and moderate weight. It pulled a three-gang Oliver plow.

Plows and Other Tools.

The Benicia Iron Works had their disc plow in operation. The John Deere Company had several plows and tools of different kinds, as did the Oliver, with its usual fine showing. The Killifer Company had two subsoilers, heavy cultivator and two gang plow, and the Holt Manufacturing Company the good assortment of plows and tools above referred to, in addition to the four caterpillars operated.

A couple of years ago we had occasion to investigate orchard plowing with tractors and the point soon developed that it was easy to get tractors to do the work, but that there was lots of room for improvement in the tools to go with them in orchard work. Possibly there are yet improvements to be made in the tools for the tractors, and improvements will continue to be made as years go by in the tractors, but both tractors and tools at the farm power demonstrations gave thorough satisfaction for all kinds of purposes. They showed a wide range of use, and did everything that a demonstration could be asked to do.

The C. L. Best Track Layer Pulling 140 Inches of John Deere Plows.

How the Rumley "Toe Hold" Handled the Davis Disc Plow.

o, was a point dwelt on in the stration.

Avery tractor, with 20 horse- on the draw bar, was one of g medium weight tractors, the being particularly interesting on t of being operated by only one s was the case with one or two outfits on the field. For the r itself the spiral grouter on the s was a feature especially noted, full traction in bad places and g an easy method of attaching tension for soft ground. Other- few gears and light weight for were points brought out.

As previously stated, it was news to that one man could operate both and tractor. This tractor pulled "self lift" plow with 5 14-inch bot- cutting 6 to 9 inches. Control is by a rope, the operator pulling gle rope to either set the plows to lift them out of the ground. ming out also they come out one another, so as to start or finish plowing squarely. The plow s 1,500 pounds.

One-Man Mogul Outfit.

International Harvester Com- with their Mogul tractor, had er one-man outfit, this being a e disc with a 10-foot cut. The wheels are set to come just be- the two ahead, so as to stir particle of soil. The cut was four inches deep, making the kind of a seed bed. This disc ator was operated from the r by means of a wheel project- om cultivator to within easy ng distance of operator. It also de by the International Harvest- mpany.

Mogul itself was called the self lift plow here. This tractor drew six bottoms, operated by a single cord attached to the tractor. Despite the horse-power, moderate weight was one of the features of the machine, on account of simplicity of construction and operation, gained by the long experience of the manufacturers, which is the oldest concern in tractor construction.

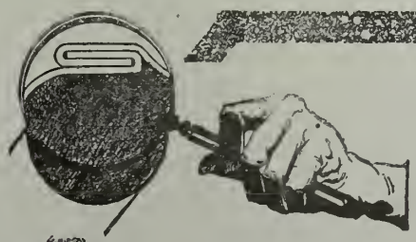
All of these one-man outfits where plows or cultivators could be operated by the engineer made important and striking parts of the whole farm power demonstration.

The Bacon Baby.

The Bacon Baby 10-20 horse-power general purpose machine approached closely the orchard tractors in size and type. It drew four 10-inch Oliver Bonanza plows. The spur gears, which provided the leading characteristic, appeared to give an extremely small amount of machinery, very effective transmission and very slight wear being claimed for that kind of transmission. The gears were encased. Like some of the other tractors, light weight and simplicity was obtained by having auto steering gear.

Two Samson Sieve Grip Tractors.

Two Samson Sieve Grip Tractors were there, one with extensions on the wheels, the other without. The sieve grip, of course, was the distinctive feature, enabling the tractors to travel over as soft ground as a solid wheel and yet not packing the soil, but getting a firm grip on it and leaving the soil stirred somewhat behind it. On account of design of the whole outfit, compactness and power, this is particularly adapted for orchard work. With 25 engine horse-power, the machines developed 8 to 10 horse-power



Lock Seamed

No Solder
No Rivets

Ames Irvin Lock Seam Irrigation Pipe won first prizes against all competitors at the Sacramento State Fair in 1913 and at Fresno and San Jose County Fairs in 1912 because

Ames Irvin Irrigation Pipe

— is made without solder or rivets. Only the sheet of steel itself is used.
— the sheets are edged, locked together and set down under 3500 pounds pressure.
— the union of metal is complete. It can't leak or rust. It is simple, solid and strong.

Send for booklet O.F. Find out all you can about irrigation pipe before you buy. Your judgment will tell you which will stand the roughest handling. Send for it today.

Ames Irvin Company
8th and Irwin Streets
San Francisco, Cal.

The Selection of a Pumping Plant

Last month, with the recent University of California circular on the "Selection and Cost of a Small Pumping Plant" used as a guide, an account was given of the methods of determining on the best type of pump for any location, and also the flow of water that was needed. Knowing these points, and also the total lift required, there can be calculated without trouble the size of pump best suited for the service and the amount of power needed to operate it. This matter is discussed here.

Naturally, the greater the lift, the greater horsepower needed to get the same amount of water out, and there is a very close relation between lift and horsepower, whatever type of pump is used, or whatever distance water is pumped. However, it is natural that some types of pumps will be more efficient than others, that is, make better use of the power that operates them; also, that there will be a difference in efficiency between large and small pumps.

As a rule, large pumps make a much better use of power than small ones. For example, a two-inch centrifugal pump will average only 30 per cent efficiency, or only 30 per cent of power applied will be realized in actually sending out the water, while for an eight-inch pump the average is 55 per cent, or more than half of the power goes solely to raising the water.

Likewise, the greater the lift, as a rule, the less proportion of power applied is usually lost in transit. That is, double the lift is likely to require a little less than twice as much power to raise the same amount of water.

So, in figuring out power required all that is needed to know is the efficiency. If a centrifugal pump is 40 per cent efficient and you know the horse-power required for a lift of say 40 feet, you would judge at once that a deep well pump of 200 feet lift would require five times as much power in theory, but when you see that such a pump is 50 per cent efficient instead of 40 per cent, you see that there is less waste by one-fifth, and that only four times as much power actually is required.

Size of Centrifugal Pump.

If a person has only a short lift, he generally uses a centrifugal pump, and the following table will show just what size of pump is needed for a given flow of water; next, what water horsepower is required (or the amount actually utilized) and the brake horsepower necessary, and then the approximate cost of the pump:

No. Pump.	Gallons Per Minute.	Water H. P. Per Foot.	Brake H. P. Per Foot.	Cost.
2	100	.025	.081	$42
2½	150	.038	.11	51
3	225	.057	.14	57
3½	300	.08	.18	65
4	400	.10	.22	75
5	700	.17	.34	85
6	900	.23	.46	115
7	1,200	.31	.62	145
8	1,600	.41	.75	170

The following will explain the above table. The number of the pump is the same as inches in diameter of discharge pipe, so that a No. 6 pump has a six-inch discharge pipe, etc. If a person needs 300 gallons a minute, he requires a 3½ pump, and so on, without direct reference to total lift, and the cost of the pump will be $65, or thereabouts.

Columns three and four, especially the latter, relate to the amount of horsepower needed and by them the size of engine or electric motor is determined. They are stated on a foot basis and the number has to be multiplied by the number of feet lift. For instance, if the distance from pump to outlet is 20 feet and the water drops 20 feet more when the pump is in operation, there will be a 40-foot lift. If a 5-inch pump is used, per foot, the horsepower of engine or motor will be forty times .34, or 13.6, or 14 for good measure.

Calculation of Power.

It is very simple to calculate the power necessary to lift any certain amount of water a definite distance. First is found the power necessary in theory, that is, water horsepower, then by knowing the approximate efficiency of the pump this can be increased so that the brake horsepower required will be known.

One horsepower will raise 3,960 gallons of water 1 foot in one minute. This relation enables one to find the net horsepower required in any case by multiplying the discharge of the pump in gallons per minute by the total lift in feet and dividing by 3,960. Thus, a man wishes to get 225 gallons per minute and he has to lift it 40 feet. The example is 225 times 40, or 9,000, divided by 3,960, or 2.28 useful horsepower. If the efficiency of the pump is 50, the engine or motor will have to be just twice as powerful as this, or have 5.6 brake horsepower, or six horsepower for good measure. And so with any other amount of water, lifted any definite height.

The efficiency of power plunger pumps varies with the size of the pump and with the lift. A greater efficiency is obtained with the higher lifts and the larger sizes. Such a pump with 3-inch cylinder and 4-inch stroke, capacity of 18 gallons per minute, has only 30 per cent efficiency for a 50-foot lift and 45 per cent efficiency for a 250-foot lift. A 7 to 9 inch pump with 10-inch stroke, lifting from 210 to 340 gallons per minute, has 50 per cent efficiency for a 50-foot lift and 78 per cent efficiency at 250-foot lift.

Deep well pumps have efficiency of from 35 to 55 per cent, the power being applied more efficiently the greater the flow and the higher the lift, as with other types. With proper installation and operation, the efficiency, or ratio, between useful water horsepower and brake horsepower should be from 50 to 65 per cent. The plant efficiency of air lift pumps has averaged only about 20 per cent.

After a person has determined upon horse power required, he has to decide upon the kind of power used. Operating costs have to be taken into consideration, as well as initial costs, but the following table, giving the approximate cost of electric motors, gasoline engines and simple slide valve, non-condensing steam engines, with locomotive boiler and auxiliaries, for the various horse powers will be of value. The electric motors are with 1,200 revolutions per minute:

H. P.	Cost Motor.	Cost Gas Eng.	Cost Steam Eng.
2	$ 70	—	—
3	85	—	—
5	110	$ 375	$ 500
10	200	550	625
15	230	700	800
20	320	850	925
25	360	1,000	1,000
30	—	1,200	1,200
40	450	1,600	1,350

The above costs are for pumps and engine, and do not include the accessories, the foundation, the labor of installation, and the housing. For an electric plant the cost of transformers should be added unless these are supplied by the electric company. The accessories will include the suction and discharge pipes, the valves and fittings, the priming pump, the connection between pump and engine.

For a rough estimate of the total cost of valves, priming pump, all fittings and suction pipe, but not discharge pipe, may be taken as about 10 per cent of the cost of pump and engine for a gasoline or steam plant and 20 per cent for an electric plant. The cost of a building to house the plant will range from about $25 for a small plant, to $100, or more, for a larger plant.

Results Compared with Theori

Here we have:	*There they have:*
Ten telephones for each hundred persons.	One telephone for e hundred persons.
Nearly one rural telephone to every two farms.	Practically no te phones on the farms.
Reasonable rates fitted to the various needs of the whole people.	Unreasonable rates bitrarily made without e gard to various needs the whole people.
Telephone exchanges open continuously day and night.	Telephone exchan closed during lunch h nights and Sundays.
Policy—prompt service.	Policy—when y turn comes.

America's Telephones Lead the World with the Best Service at the Lowest Cost.

AMERICAN TELEPHONE AND TELEGRAPH COMP
AND ASSOCIATED COMPANIES

One Policy ***One System*** ***Universal Ser***

The Horticultural Future of Imperial County

e who know something about perial valley without being per- familiar with it are apt to e that fruit production is a g thing there and very promis- n actual fact, although promis- g, it is at present only a mere n the bucket as compared with , livestock and general farming. ise, there is about as little d regarding varieties and the methods to use regarding same, re could be, with few excep- Leaving out table grapes, apri- dates and a few oranges and os, there is hardly a tree in the in orchard form, and experi- as had to be limited mainly to ard trees.

justification for going into de- the subject is the very inter- facts that have been developed. ewise the grower of shipping and even of drying and canning had better know pretty well he can expect from such a great n as this, with large prospects.

Table Grapes.

le grapes have made their mark, ape growers everywhere know. ermore, recent developments se even greater things for them. are about 1,000 acres out and can easily be enough to produce at the early markets will stand. is little if any probability, how- of wine grapes or raisin grapes produced in noticeable amounts. ding varieties are Malaga, Sul- (Thompson's Seedless), Mus- d Persian 21. Grapes make a nital vine in a single season, are then ready for business. th is enormous and production with right handling. The grapes six weeks before any other part alifornia, except the Coachella valley, which is really a kind of an extension or branch of the Imperial valley, and so have the earliest and best market to themselves for a long period.

One thing that has seriously injured the table grape prospects of the valley was their poor carrying qualities. A way has been found to totally overcome this, improving also the desirability of the grapes, and the valley, with its long, early season and fine quality grapes, can easily become more famous for its grapes than it now is for its cantaloupes. Poor carrying qualities resulted from shipping watery grapes rather immature, owing to the rush to be first on the market. To make the grapes more solid most growers were inclined to hold back on irrigation toward fruiting time. Last year S. M. Bixby of Imperial thought his vines needed water and irrigated them heavily. Then he let the grapes sugar up strongly and they arrived in the markets in perfect condition and of very superior flavor. He netted $925 from three and one-half acres. Thus it is proved that grapes can easily be produced of the finest quality and best carrying qualities. This should bring it about that only mature grapes will be shipped, and it will be a fine thing for all California grape growers if the Eastern consumer has a good taste left in his mouth instead of a pucker when sampling early California grapes.

The earliest grape of all is Persian 21, grown nowhere else in California. It is of excellent quality and is often ready to ship by May 20.

irst Season's Growth of Apricot at F. W. Waite's Ranch, El Centro.

Apricots.

Of apricots it can be said that of all deciduous fruits they apparently are most at home, and several hundred acres have been planted. The yield is good and production quite uniform. Growth is extremely vigorous and rapid and trees will bear the second year. Pruning methods frequently are not what they should be, but on other ranches they are very satisfactory. The fruit is very early, Newcastles ripening April 26 to 30, and Royals and Blenheims following immediately. Thus far all the fruit has been shipped, but heavy production and good quality will justify drying and canning, so it is said, if shipping is unprofitable. Drying will have to be in stacks, as the fruit would dry to chips if exposed to direct sunshine. As there is nothing unique about apricot growing, the subject can be dropped, the fact merely being emphasized that early fruiting and heavy, uniform production gives a possibility of a new factor entering both the canning and drying business. Owing to the dry, hot climate, the color of the dried apricots is said to be very clear and fine, the fruit resembling that of the Winters district.

Peaches are not grown, nor will be, except early shipping varieties, for which there is an excellent outlook.

Pears Are Freaks.

A very interesting development in the pear business is that although the valley owes much fame to its earliness for nearly everything grown, the biggest planting of pears in the valley was made because they came so late. This is the orchard of Fritz Kloke at Calexico, about a mile from the Mexican border. He has planted about sixty-five acres, mostly to Winter Bartletts. Despite the early spring and intense heat of the long summer, these pears are picked early in December, can be picked near Christmas, are fine keepers, of excellent quality and have stood shipment as far as Germany. The explanation for late ripening seems to be that the pears do not pollenize and therefore hang on very late. If they were pollenized properly it is claimed that they would ripen in October. This explanation is given by F. Heiny of Brawley, who states that the dry, hot weather when pears blossom prevents pollenizing.

Regular Bartletts ripen in October and are said to be of inferior quality. The Winter Nelis is a poor bearer. The Kieffer will bear, but the grain is coarse and quality inferior.

Mr. Kloke's discovery of the value of the Winter Bartlett came through the planting of a family orchard nine years ago, Winter Bartletts being substituted in the nursery for the standard Bartlett. They grew so well and bore so heavily of fine fruit that he saw the opportunity for fruit production on a commercial scale, propagating from the original trees. The best bearer of these bore so heavily that it died, and Mr. Kloke has been pruning for strength and limiting fruit wood as a result on young trees.

Growth and production is heavy. He will let the trees bear a fair crop the fifth year and get down to heavy work the sixth.

Figs Are Amazing.

F. Heiny of Brawley is the fig specialist and an investigator into other kinds of fruit as well, especially citrus fruits. Very interesting features are the extreme earliness of fruiting, both as to season and age of figs. Likewise the great success of the Pseudocarica Capri figs, which produces pollen in the winter crop of figs, by which means the Smyrna figs can be made to produce fine quality figs of first crop, just like the Adriatic.

Fig cuttings planted in winter are six and eight feet high by fall and send out figs the first thing next spring. Mr. Heiny says he has had

The Yuba Ball Tread Tractor is not only the name of a machine, but is the title of a booklet.

This booklet has an attractive cover and is illustrated throughout with photographs showing the uses to which a tractor can be put.

Most important of all is the message this booklet carries. It is of interest to every farmer who has to plow, harrow, haul or irrigate.

Only a limited number of these booklets were printed.

We want you to have a copy.

Write for it today.

The Yuba Construction Company
DEPT. C.
433 California Street
SAN FRANCISCO
Works
Marysville California

ripe figs the first year, or the same season the cuttings were planted. The growth is enormous and production heavy.

The fig wasps issue early in spring from Capri varieties, and, in fact, are coming out practically all the year. Figs set early and the first crop is ripe in May and the second crop in July. Smyrna figs, the great dried fig of commerce, have a tough, thick skin 'n California, but Mr. Heiny says that in the Imperial valley the skin is thinner and more tender than in other parts of the State. With growth and quality, Imperial valley ought to be a great producer of dried figs. No commercial plantings of any size have been made.

Mr. Heiny uses the Capri figs on all varieties of figs and states that the Black Mission is about a third larger, of improved quality and has more the syrupy texture of the Smyrna fig as a result.

The Pseudocarica Capri fig has been spoken of before, but results here emphasize the benefits of all fig growers using it, also the benefits of using Capri figs with other varieties than the Smyrna, including the Adriatic and Black Mission.

Olives and Almonds.

The date, of course, is a great thing for the Imperial valley, but owing to its lack if importance over most of California and a reference to it in our March issue, need not be considered here. Few other fruits have been tried enough to prove their possibilities. It is claimed, however, that olives promise wonderful things.

A University of California publication on the Imperial valley states: "From whatever angle we view the question, the olive appears to have a distinct advantage. It will be strange indeed if in the future years Imperial county does not lead all California counties in the production of olives. The olive is perfectly at home in the valley and making a rapid and healthy growth, comes into bearing early and produces heavy crops of very high quality fruit."

The olive is here stated to be free from pests and the crop to come in an excellent time to meet labor demands. Almonds also are highly praised, though so few have been planted that little has been demonstrated. Large growth and heavy early bearing are claimed.

As stated at the beginning, the commercial plantings of fruits, except table grapes, apricots and dates, are mostly non-existant or very small. Absolute proof of possibilities of varieties or best methods of culture have rarely been secured. When a fruit is adapted to the valley, growth and productivity is extremely heavy and the time is likely to come when the Imperial valley will be one of the greatest fruit producing sections of California. For this reason, if for no other, the matter should be of extreme interest to every fruit grower of California.

Before dropping the subject of fruits it will be well to mention cantaloupes, which are a fruit from a market standpoint, if not from a vegetative. Imperial valley has walked off with the early market by a nice margin with this product and achieved much fame, so that cantaloupes are sometimes thought to be one of the greatest crops. This opinion is more common on account of stated value being mostly on either f. o. b. basis, or on selling price in final markets. When reduced to net returns, cantaloupes are a very small crop as compared with alfalfa, barley and other products extensively grown, and the acreage, though up in the thousands, yet appears extremely small in comparison with the whole area of the valley.

Cantaloupe growing centers at Brawley, where considerable fairly light soil is found. Big profits have been made from cantaloupes, but the acreage now grown supplies the market quite well and further increase is merely a matter of development. Cantaloupes, like several other crops, pay well to those who know how to make the best success with them, and in general mainly help to bring prosperity by making the valley a region where many products can be successfully grown.

Bran Mash for Grasshoppers

Last year grasshoppers were pretty bad, but as there is lots of feed where the hoppers develop, it is unlikely that they will come down in numbers this year. Nevertheless persons who have been troubled in previous years may want to paste up this receipt for a poisoned bran mash where they can get it on demand. It comes from Kansas, but uses a California product which few people think of here as grasshopper bait. It is composed of bran 20 pounds, paris green 1 pound, syrup 2 quarts, oranges or lemons 3, water 3 1-2 gallons.

In preparing the bran mash, the bran and paris green should be mixed thoroughly in a washtub while dry. The juice of the oranges or lemons should be squeezed into the water and the remaining pulp and the peel chopped to fine bits and added to the water. The syrup should be dissolved in the water and the bran and poison wetted with the solution, being stirred at the same time so that the mash is thoroughly dampened. This bran mash should be sown broadcast in such a manner as to cover about five acres with the amount of bait by using the quantities of ingredients given in the formula. It should be placed where the largest number will find it in the shortest time.

No mention is made as to the time it will remain moist enough to attract the hoppers, which is one of the stumbling points in practice.

A California mash is composed of 40 pounds of bran, two pounds of molasses and five of white arsenic, the latter being considered better than paris green.

Water the calf often. He will not be so liable to gorge himself with milk if you do.

Control of Melon Aphis

While melon plants are young considerable trouble is likely to arise from the melon aphis. It is difficult to control when there is a large acreage, but when there are only a few plants any aphids that show up can be destroyed and prevented from spreading by spraying with kerosene emulsion or by tobacco extract washes or by simple soap solutions. A good spraying outfit must be available and the nozzles suited to driving the spray upward under the leaves where the insects gather. The State Insectary sends out ladybirds to attack the aphids, but they have to arrive on the ground early, and once the aphis gets a good start it takes quite a long time for the ladybirds to increase enough to materially check them.

A good investment for a farmer is an inexpensive bulletin board, which may be set up at the roadside and serve to advertise what the farmer has for sale. Particularly on a road traveled by motorists from town, a sign announcing fresh eggs or garden truck is likely to bring good returns.

Too many farm front yards are used merely for storing implements. An old-fashioned flower garden, made up of showy, hardy flowers, will make the farmstead really attractive.

Melons in Spain.

Some interesting facts about m in Spain are given in a recent sular Report. It is stated that eral valuable varieties could prol be successfully grown in Calif among which are the Valencia, w matures in the late fall and kee good condition for three or months, melons in this variety obtainable throughout Spain as as February. These melons do generally ripen on the vine, bu gathered while green and hun nets from the ceiling and door and exposed to air and sun to r

A number of the varieties of m can be kept in good condition long time by putting them, cleaned and dry, in barrels or b filled with fine sand, or, better with a mixture of coal dust and dust, taking care to shelter against light, moisture, heat and On the Spanish Mediterranean melons are kept through the e winter by tying them with es strings to the ceiling of a dark r

One hectare (2.47 acres) of la the Province of Valencia produce an average 1,500 dozen melons dozens per acre), which, at a w sale price of 36 cents per d yields a gross profit of $540. De ing from this amount two-third account of rent, expenses of cu tion, and taxes, the net profit am to $180 per hectare ($72.87 per a

130 PAGES OF LUMBER BARGAINS

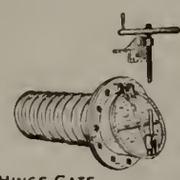
Everything needed in building or rebuilding a home—a article from the front gate to the rear fence—and a pri direct to you that will save you money on every item y buy. We make and sell only new goods, guaranteed to as represented—no wreckage· no odds and ends. Here a some money-saving prices from our new 130-page catalog

8x10 8-lt. windows, glazed ---------- $0.85
2 ft. 4 in. x 4 ft. 6 in. windows, 2-lt., glazed ---- 1.40
2 ft. 8 in. x 6 ft. 8 in. 1¾ Oregon Pine doors - 1.50
Sash Door, 2 ft. 6 in. x 6 ft., 1¾ Oregon Pine, like cut, glazed ---------- 2.65

There are hundreds of others. Tell us to send the cat logue. Address

CONTRACTORS AND BUILDERS' SUPPLY CO., Inc

Corner Fifth and Cypress Sts., Oakland, Cal.


HINGE GATE

INVERTED SYPHON

4-C GATE

SLIDE GATE

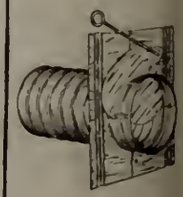
IRRIGATION GATES

For Use in Connection With Rust Resisting American Ingot Iron Corrugated Pipe

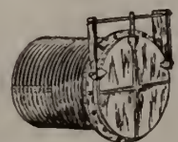
All stamped with the approval of experienced irrigators.
The cuts show only part of our line.
Write us your requirements.
Consult our engineers.

California Corrugated Culvert Co.

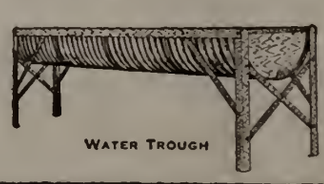
421 Leroy St., Los Angeles 410 Parker St., Berkeley


4-C GATE

SIMPLEX STOCK TROUGH


AUTOMATIC TIDE GATE

LENNON FLUME


WATER TROUGH

BERKELEY GATE

WITH SCREW LIFT

Experiences in Olive Culture

By W. A. Hayne, Marysville

(The following is an address de-
ered by W. A. Hayne, an olive
ower of long experience both in
nta Barbara and Yuba county, at
e recent meeting at Marysville,
hen the Northern California Olive
owers' Association was organized.
few paragraphs have been omitted.)

In 1884 I was raising olive trees in
nta Barbara, and I have observed
any things in regard to the require-
ents of the trees.

The olive will grow in a variety
soils, but the success depends on
e proper locality; this means cli-
te, drainage and irrigation.

A great drawback to olive culture
Southern California and, in fact, in
alities even north of San Fran-
co is the black scale. The people
Yuba county do not know how to
operly appreciate the blessing of
t having the black scale to contend
th.

So far I have not seen any black
ale on any of the olive trees in
tba county, and I know it was
ipped in to this part of the State.
xactly why it does not thrive here I
nnot quite explain (The dry heat
parently does not favor its growth
d also favors the parasites that
eck it. Editor.)

To make olive culture a success I
vise the Mission variety—then be
re to blast each hole—a stick of
wder will jar and crack the earth
12 or 15 feet in all directions,
ring good drainage. Although I
vise irrigating olives I do not by
y means wish to impress one with
e idea that olives love water; water
ll destroy them if it stands around
e roots. The idea is to wet the
ots thoroughly, but arrange it so
at the water will surely drain off.
olives are well irrigated when they
e in bloom the tree will not cast as
uch of the bloom as it otherwise
uld, and a heavy crop will appear
the trees; then when the fruit is
e size of a green pea, again wet
em and always cultivate the irri-
ted soil before it can harden or
ke.

Proper pruning is necessary. Most
ve trees are allowed to grow too
l; they should be cut square off on
p and never allowed to grow
gher than, say 14 feet or there-
outs. By keeping them cut off more
le branches will be developed and,
nsequently, much more fruit.

Then, too, the harvesting is made
sy—a man can pick one-half the
op from the ground, then by mount-
g a step ladder, easily reach the
her half.

It costs about $10 per ton to gather
uit that is easy to get at, but $18 is
ing paid by a gentleman I know on
count of the difficulty of getting at
e fruit.

The tree will resist the wind if not
owed to grow tall.

I once had 27 varieties of olives in
ll bearing and my experience is that
is best to eliminate all except the
ission. The Mission is a hardy
ee and grows larger than most
rieties, and I have particularly
ticed that it is the most accommo-
ting of all olives.

I mean by that, that when the fruit
ripe enough to gather that should
e not be ready or able to imme-
ately commence to harvest, the fruit
ll remain plump and firm for a
onth to six weeks and still be per-
ctly good.

Sometimes the labor question is
ch that harvesting meets with de-
y. Most of the foreign varieties I
d softened and fell from the trees
not promptly gathered.

I call the Mission variety, there-
re, the accommodating olive; they
e large enough for good pickles
d at the same time are a good oil
ive

The old Mission Fathers, of course, well knew many species of olives, yet they were wise enough to only bring from Europe what is now called the Mission olive, they having been planted at the Missions.

The north wind sometimes causes the olive (the fruit) to shrivel and this should be guarded against as much as possible.

It is a good plan, therefore, to plant a double row, or at least a single row of eucalyptus, blue gums, on the north line; at one time I did not believe much in wind breaks, but later on, in San Luis Obispo county, I had some experience with wind and I am now a firm believer in wind breaks. I have just planted a row of eucalyptus a mile long on my place near Marysville, to guard against the north wind. They grow very fast and give results sooner than anything else. Every quarter of a mile should have a wind break—to do it properly. It is said that they will not allow other trees to grow near them, all of which is so, but the 60 or 70 feet that is given to the wind break is land well given and will be repaid by the good derived.

There are several ways to propagate the olive. A cheap way is to use the tips of the branches which are scarcely as thick as a knitting needle—usually these are propagated under glass. These trees are slow to develop, as the cuttings are weak.

My trees are grown from the large bearing wood, and when two years old, stand from 5 to 6 feet high. Trees grown from the large cutting will come into bearing much sooner than if raised from the tips. Another way is to layer the trunks of the trees and propagate the shoots that will grow from them.

On my place in District 10, near Marysville, I have the trees growing in nursery both from the large cuttings and from the layers, and both are doing well.

At present all of my trees are in nursery, but will be ready to plant out next season; March and April are good months to plant the trees in orchard form, provided, of course, the land has been plowed and all prepared for them beforehand.

The future market for the pickled olive is assured. I well remember when it was hard to get over $20 a ton for ripe olives; this was before the merchants of San Francisco had succeeded in introducing them on the Eastern market. Time and patience finally accomplished it and now contracts are signed at $165 per ton on the trees, and in some instances $220 for selected olives.

I heard of an instance this year where an order came from the East for eleven hundred cases of black olives, but the olives could not be had. I think it would be safe to say, that out of the one hundred millions of people in the United States, that 5 per cent of that number have not yet tasted the California black olive, and yet we cannot supply the present demand. Every State in the Union will be offering us a market for our olives. They cannot be grown all over the United States like other fruits can, and therefore the Eastern States will look to California to supply them with black olives.

A short time ago an Eastern gentleman came into my place while we were planting olive cuttings. His remark was, that he knew nothing about olives, but went on to say that he was not surprised that I was planting them. He explained his meaning by saying that "back East they had to pay almost a nickel apiece for California black olives."

To show how little the Eastern people yet know about black olives—a gentleman in Marysville wishing to send a real treat to his Eastern friend, shipped him a lot of nice black olives—his friend was very grateful and thanked him by letter, but was "so sorry that all the olives had spoiled on the way, having turned black, and had to be thrown away."

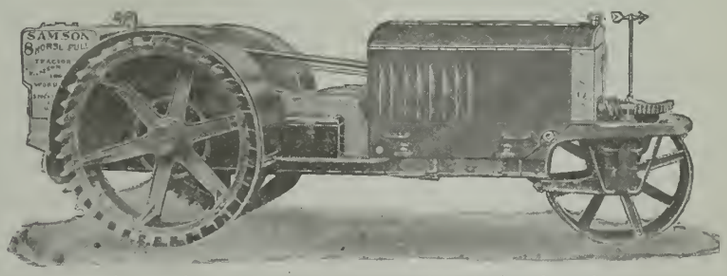
The people of the United States, up to quite recent date, have only known the green olive; but, like everyone who has tasted the two kinds, are fast discarding the green.

A friend of mind, a Spaniard, told me that in Spain they only used black olives on their tables, but that they shipped us the green ones—we evidently not knowing how much better the black olives were. This, however, is changing now and California is destined to supply all the Eastern States.

No fruit can be planted that has so bright a future before it as the olive. It is generally supposed that as the olive tree lives to be several thousand years old, that it necessarily requires many years to come into bearing. This is not the fact. Trees raised from the large cuttings and allowed to remain in the nursery until two years old and then set out in orchard form, will commence to bear the fourth year; so it does not require more time than other fruits.

In conclusion, I will repeat that successful olive culture depends on proper locality, drainage, irrigation, pruning and the Mission olive.

NOW Is the Time for New RUGS.
Send for Our New Free
RUG CATALOGUE
Rugs in all sizes. Credit if you desire.
EASTERN OUTFITTING CO.,
1017 Market St. San Francisco, Cal.

INVESTIGATE
Samson SIEVE GRIP Tractor
THE STRENGTH OF SAMSON TRADE MARK IN EVERY PART

A TRACTOR with an engine built for the heavy work required of Tractors.
A TRACTOR with all its working parts protected from dust and dirt.
A TRACTOR with all its transmission running in clean oil.
A TRACTOR with a wheel that does not and cannot pack the soil.
Write for catalogue O. A.
Samson Iron Works
Stockton, Cal.

Freeport Gasoline Engine
The Engine of Perfect Design and Simplicity.
Everybody's Favorite.
Is Operated either with Gasoline or Distillate. Fully Guaranteed to Give Entire Satisfaction.
Built on modern lines—sizes 1½, 3 and 5 Horse Power.
Send for Catalogue — Mailed Free
Pumps!
Pumps!
for every service and use.
National Centrifugal Pump
has ring-oiling bearings. It is fitted with one inside and one outside bearing between the pulleys, keeps runner in perfect alignment, doing away with friction and preventing bearings from heating. Long packing box. Guaranteed, modern up-to-date. We also carry the largest line of Wind Mills, Tanks, Pipe, Pipe Fittings, Hose, Brass Goods, etc.
Send for our large Catalog. Mailed free.
WOODIN & LITTLE, Pump House
33-41 Fremont St., San Francisco, Cal.

Crop Conditions All Over California

Reported by County Horticultural Commissioners

ALAMEDA, Fred Seulberger—Black Tartarian cherries are making only 40 per cent of a full crop and Royal Ann 20 per cent. Apricots promise an 80 per cent crop, pears 70 per cent and prunes 20 per cent. Berries are making a full crop.

HUMBOLDT, George B. Wetherby—Weather conditions have been favorable for all deciduous fruits, which have made nearly a full setting. Aphis trouble combined with scab may reduce apple and pear production slightly below normal. Strawberries are arriving freely in the local markets with prospects of a good crop.

KERN, Kent S. Knowlton—Apricots are now coming on the market (May 18) with a full crop. The drop in the peaches is quite heavy, although the prospects are good for a normal yield. The apple crop will be normal with the continuance of favorable conditions, while the pear crop was reduced below normal because of late frosts Prospects for a citrus crop are good and with favorable conditions the crop will be normal. There is a heavy drop in the grapes, although the crop will probably be normal. The berry crop is now on the market and is large. Field crops are normal. Grain production is above normal and will be the largest in this county for years. Live stock is in fine shape and is in big demand. We are several thousand head short for the amount of feed we have.

LOS ANGELES, Wm. Wood—Following are the indications of yields of the various fruits at this time: Almonds, 100 per cent; walnuts, 100 per cent; apples, 90 per cent; apricots, 100 per cent; figs, 100 per cent; olives, 100 per cent; peaches for canning, drying and shipping, 100 per cent; pears, 100 per cent; plums, 100 per cent; table and wine grapes, 100 per cent; berries, 100 per cent. Oranges promise 90 per cent of full yield; lemons 75 per cent and grape fruit 75 per cent. Vegetables, grain and live stock are all in good condition.

MADERA, George Marchbank—Almonds promise 75 per cent of a full crop; apples, 85 per cent; apricots, 35 per cent; figs, 100 per cent; prunes, 90 per cent; and peaches 100. Grapes and olives are both in full bloom and indicate heavy yields, though it will require several weeks to fully determine what the crop will be. Grain is in good condition and livestock is in excellent shape.

MERCED, N. H. Wilson—Canning peaches will only make 40 per cent and dry and shipping peaches one third of normal production. Wine grapes, Malagas, almonds, olives, pears and citrus fruits all give indications of perfect yields. Field crops are large. The barley production is the largest for years and we will have large amounts of brewing barley. We also have a larger crop of hay this year than for years. The ranchers cut early and there was no rain to spoil the hay, which is in fine condition. Live stock also is in fine condition. There is plenty of feed and there is a big demand for beef cattle.

RIVERSIDE, D. D. Sharp—Prospects are very promising for all varieties of deciduous fruits excepting prunes, which are showing light. The apple crop on account of storms in the mountains may be a little shy of normal also. Lemons are very promising, but oranges are very uncertain at this stage of the game. Prospects are good on early sown grain, but late sown will be used for hay. There is a brisk demand for good dairy animals, which are scarce.

SAN BENITO, Leonard H. Day—Apricots promise 80 per cent of a full crop, prunes 50 per cent. apples and peaches both 100 per cent.

SANTA BARBARA, C. W. Beers—Apples and apricots are in perfect condition and peaches, pears and plums will make a normal yield. Walnuts will only make about 60 per cent of a normal crop Some aphis is now at work and some blight is in evidence, although the blight does not seem very active Lemons will make a full, normal crop There is a splendid setting with a full crop gathering. Hay and grain is short, not to exceed 70 per cent. Live stock does not exceed 60 per cent of its normal number, as nearly all were shipped out of the county last year and ranges are not fully restocked up to date. Feed is abundant on pasture lands. Citrus and deciduous fruit planting has been heavy and all new planting looks well. The cherry acreage has been largely increased There was quite a fall of cherries just after setting this spring The cause is not known.

SANTA CRUZ, W. H. Volck—Apples at present in Santa Cruz county indicate 70 to 75 per cent of normal production; apricots, 100 per cent and cherries 20 per cent. All kinds of berries are in almost perfect condition. Oat hat is making from 80 to 90 per cent of full yield.

SHASTA, George A. Lamiman—Prunes will make only about 25 per cent of normal yield; peaches generally are good, about 90 per cent perfect condition; plums, 90 to 100 per cent; apricots and almonds, 90 per cent; apples, 75 per cent; grapes, 100 per cent, and pears, 90 per cent, if blight does not destroy many of them. Berries will all make a full crop. Vegetables are in fine condition. Grain is making a heavy crop and haying is in progress. Live stock is in excellent condition and there is plenty of feed. There is a large planting of all varieties of corn, also a large acreage of melons and pumpkins.

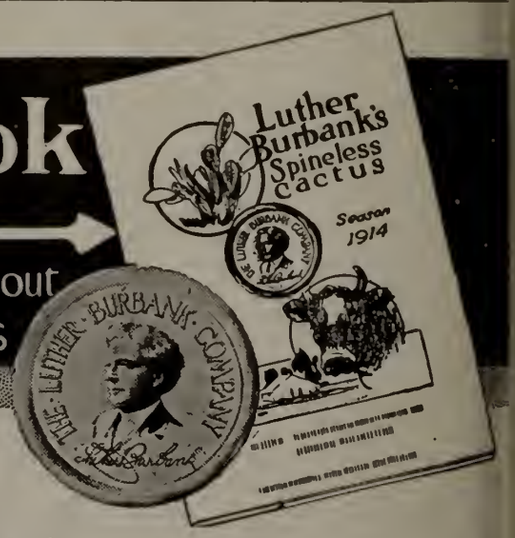
SOLANO, C. R. MacBride—Indications for the various fruits are as follows: Almonds, 50 per cent; peaches, 90 per cent; apricots, 15 per cen pears, 20 per cent; French prunes, per cent; all other prunes, 35 p cent; plums, 75 per cent; cherries, per cent; table and wine grapes, 1 per cent. Wheat and barley and falfa are in perfect conditions

TULARE, Chas. F. Collins Peaches promise 100 per cent of no mal production, apples 80 per ce prunes 60 per cent and apricots per cent Olives are blooming ve heavily. Citrus fruits promise a fu crop at this date. Valencias are som what lighter than navels. Musc grapes are blooming full. General speaking, there are good prospec for all kinds of grapes. There is bumper crop of berries and the ha vest is now on. Vegetables are ple tiful and good. Sugar beets promi a splendid yield and will be handl in the Visalia factory. All kinds grain look well. The barley ha vest will begin before the end of t month. Live stock is in good con tion as feed is abundant.

Get this Book

it's Free

And learn about Burbank's Spineless Cactus



In this book Luther Burbank tells in his own way just exactly how he originated Spineless Cactus and the place it occupies among live stock forages.

It's an important thing for you to have at command the information this book contains, because it has a direct bearing upon your profits and your success. It's free for the asking.

It contains affidavits of stockmen who have fed Spineless Cactus and the results they attain—shows how dairy cows increase their milk from 37 pounds to 47 pounds in seven days—shows how eight hogs made an average gain of 14 2-3 pounds in 22 days; an average of 2-3 pound per hog per day.

It tells how good it is for all livestock, including poultry

This book is splendidly illustrated with actual photographs that tell a succession of fact stories.

Don't put off sending for the 1914 Burbank Spineless Cactus Book O. F. Do it to-day—a postal card will suffice.

The Luther Burbank Company

Sole Distributer of Luther Burbank Horticultural Productions
San Francisco, California

List of Contents

—This book tells you about Luther Burbank and his work.

—the history of Spineless Cactus.

—in what parts of the world Spineless Cactus can be grown.

—about its food value for livestock.

—about its annual yield per acre.

—affidavits of its feeding values from well known stockmen.

—comparative value of cactus as a forage.

—how it has supplied all the water that animals need.

—the valuable fruit, rich in sugar, that certain varieties of Spineless Cactus bear.

—the kind of climate and land needed for its growth.

—full directions for growing Spineless Cactus.

Crop Conditions in California

By the County Horticultural Commissioners

TTE, Earle Mills—Almonds at of writing (May 22) promise a r cent crop; peaches, 100 per prunes, 30 per cent; pears, 50 ent; cherries, 100 per cent; figs, er cent. A very heavy crop of es is setting, but, of course, it possible to estimate at all ac- ly what the yield will be until the June drop. Grapes are blos- g very freely. There will be y good crop of grain and hay. es are not extensively grown but what there are are yielding

PERIAL, F. W. Waite—Apri- made only 40 per cent of full Grapes will bear well.

NGS, B. V. Sharp—Grape and crops in general will be 20 per above normal in this county year. Grain never was better. and tons of fruit are being from the trees so that what is ill be larger.

LKE, George A. Lyon—Apples, nds and peaches will each give er cent production; pears will 40 per cent of a crop and s 35 per cent. The wine grape will be heavy. Grain and hay ood.

PA, A. D. Butler—Peaches are g about a 90 per cent crop; 30 per cent; cherries, 25 per apples, 90 per cent; prunes, 25 cent; berries, grain and field 100 per cent. Livestock is in good condition.

VADA, D. F. Norton—Apples nake an immense crop, and after e thinning there will be a 100 ent crop. Cherries have dropped and the crop is only 75 per of normal. Apricots and figs make a 100 per cent crop, as plums with the exception of arian, which will be 60 per cent; s 30 per cent. Peaches will be r cent above normal. Bartlett will give 75 per cent of full ction and all other varieties 115 cent, making the average pear of 90 per cent. Present condi- indicate a full yield of citrus . Vegetables are up to average. too early to forecast the grape Berries will make a big yield. nut crop is very large. Almonds walnuts are the heaviest I have seen in the county. We have average crop of chestnuts and ts. Grain is in good condition farmers are getting read to est. Livestock is looking well, ere is plenty of feed. It is 30 behind the usual time of driving e mountains.

RANGE, Roy K. Bishop—Apri- in Orange county will make an r cent crop; apples, 80 per cent; es, 25 per cent; plums, 25 per Of the citrus fruits Navels crop) will give a 90 per cent ; Valencias (new crop), 80 per lemons, 80 per cent. Trees and together are 110 per cent of ge condition. For the vege- s, beans are 90 per cent of al condition; bellpeppers, 75 per tomatoes, 100 per cent. The ge is practically all shipped. All s of berries are in perfect condi- Early sown barley is 110 per of normal; late sown, 80 per Livestock is 15 per cent above al condition owing to good and rous pasture. All varieties of ges are shipped except Valencias. picking of Valencias has started. s and field crops seem in excel- condition and are growing well. r beets are 10 per cent better average. Cool weather during has made the growth of most s slow.

ONOMA, A. R. Galloway—De- ous fruit prospects range from 25 cent of a crop for prunes and cherries to 100 per cent for pears. Other fruits range between these extremes. There will probably be about 75 per cent of a normal apple crop, 50 to 75 per cent of a full grape crop, 90 per cent berries, 80 per cent vegetables and 90 per cent of grain. There is an abundance of feed and live stock are doing well. On account of continued cool weather the hops are coming along very slowly with a poor stand.

TEHAMA, Charles B. Weeks—Apples, almonds, table grapes and wine grapes give promise of a full crop; apricots, 35 per cent of a full crop; peaches, 75 per cent; pears, 50 per cent; prunes, 50 per cent. The citrus acreage is not large, but prospects are for a full crop. A few cherries and apricots have been shipped to Portland. Strawberries produced well and are about all on the market. Growers have received fair prices for same. The acreage of wheat is small, but the quality is good. The barley acreage is large and there is about 75 per cent of a crop, as the heads are short. The oat acreage is small, but the yield is good. Sheep are on their way to the summer ranges and are in good flesh. The condition of cattle is good. Hot weather in March has resulted in one-half a crop of prunes.

VENTURA, R. S. Vail—Apricots are making 90 per cent of a normal crop. They are of good quality and the harvest will be early. Almonds appear 90 to 100 per cent normal; walnuts 75 per cent normal, though blight may reduce this estimate. The setting of oranges for next year is 75 per cent normal. Valencias are up to standard and lemons 5 per cent above normal. Beans and beets are both in excellent condition.

YOLO, Geo. H. Hecke—Apricots at the present time promise a 45 per cent crop; prunes, 50 per cent; almonds, 60 per cent; peaches, 70 per cent; grapes, 70 per cent. There is a normal yield of grain.

YUBA, G. W. Harney—Deciduous fruits will be light in some varieties, such as prunes and certain varieties of peaches and plums. Bartlett pears in well cared for orchards will make a normal crop, and in others light or scattered. Citrus fruits are setting normally. Grapes promise a full crop, though the season is somewhat late, as is the case with berries. The season is also late for cucumbers and tomatoes, though the vines are thrifty and a normal yield is predicted. Grain is heading out with promise of very good yields. On account of abundant pasture stock is in fine con-

Arsenite of Zinc as Spray

Arsenite of zinc has recently come into the field as a rival of zinc arsenate for spraying against the codling moth on the ground that it is cheaper to use, a stronger acting poison and as effective as arsenate of lead. The Idaho Experiment Station reports that results have varied considerably in its use, as some growers seem to have excellent success while others have had considerable injury develop to fruit or foliage. The station believes that zinc arsenite is not as safe as arsenate of lead as a spray for codling moth and recommends that it be combined with bordeaux or lime to prevent burning of foliage. It should never be combined with soap or lime sulphur. It can be recommended for leaf feeding insects on shade trees and for potato beetles and cabbage worms, as it has better adhesive qualities than paris green and will not injure the foliage of potatoes and cabbage.

Who says civilization is not advancing? We were in a railroad lunch room recently, and all the three persons eating pie were using forks.

Standard

Portable Flume

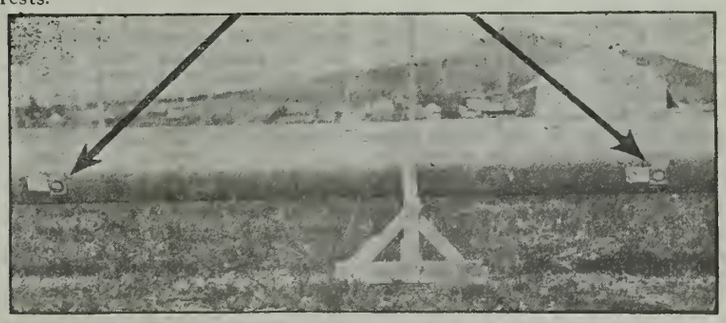
for

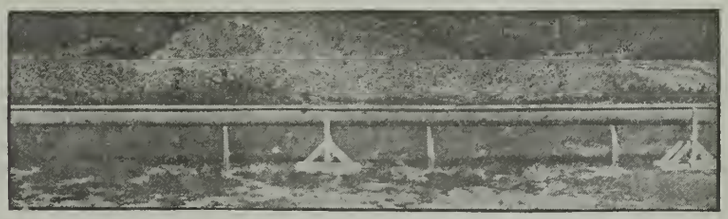
Perfect Irrigation

Non-Corrosive and Rust-Resistant. Built Entirely of Genuine Open Hearth Iron.

To fit the needs of orchards, vineyards and gardens where permanent flume is not desired or needed, we have designed our Standard Portable Flume—all metal, all genuine open hearth iron, non-corrosive and rust-resistant. A flume that will stay in use and last as long as its owner. Comes in diameters of 8, 10 and 12 inches, all in sections 20 feet long with our patent expansion joint. This flume is light in weight and requires no skill or special tools to set up or operate.

The feature of this flume is its water outlets (shown in cut below). These are placed as frequently as desired, and each is controlled by adjustable slide, which prevents waste of water. Second illustration shows the construction of the rigid light iron standards upon which our flume rests.



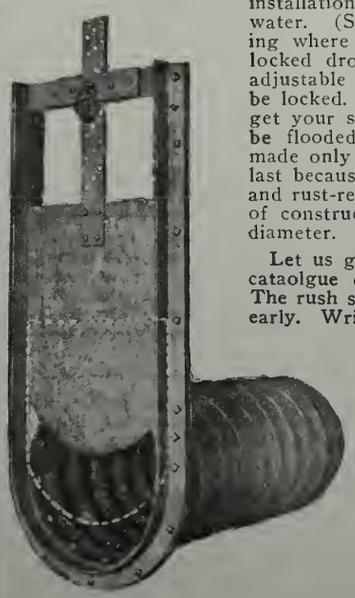


Standard Portable Flume

is built by the same men that build our corrugated pipe, known all over California for its quality. This is the flume that gives perfect service because it will last and because of its economy in preventing loss of water by seepage or damage by soil washing. This flume is for hard service and is priced to fit the purse of anyone needing perfect flume.

Standard Drop Gate

Equipped with double drops—one of which can be locked; the other slide for emergency use in shutting off water or reducing the discharge. This feature alone makes this gate worthy of installation wherever care is used in handling water. (See dotted lines in illustration showing where emergency drop is fitted, back of locked drop.) The main drop in this gate is adjustable to quarter-inch changes, where it can be locked. Using this gate insures that you will get your share of water, also that you will not be flooded. Of course, this Standard gate is made only of genuine open hearth iron and will last because it is all metal that is non-corrosive and rust-resistant. Illustration shows exact type of construction. Made in sizes 8 to 24 inches diameter.



Let us give you costs on what you need, also cataolgue of larger flume and irrigation gates. The rush season is at hand. Make your estimate early. Write

STANDARD CORRUGATED PIPE COMPANY

516 Rialto Bldg., San Francisco
737 Lawrence St., Los Angeles

Answers for Farm Problems

ROTATION WITH OATS—I have some land that has been sown in oats for about six years. Can you give me a rotation of crops that would be suitable for this land?—W. E., Napa county.

Instead of laying out a definite programme we will simply give a few suggestions and let you apply those that fit in best with your kind of farming. Root crops are excellent to rest lands from grain and hay, and the same thing applies with all cultivated crops, like corn, so if you can raise corn, potatoes or stock beets, it will to a certain extent refresh the soil. Good cultivation and the weed killing that accompanies corn, beet, potato and such culture does the land lots of good. It is likewise a fact that much grain land in California has been greatly injured by continuous shallow farming, so that a hardpan forms, and if your soil is inclined to be heavy and has been unwisely handled, the use of a subsoiler to break up this artificial hardpan and let life, air and water sink down a bit will be of high value. However, even so, a suitable rotation will be highly advantageous, for no soil, no matter how well handled, can profitably be used for continuous grain farming. Another thing you should try to do is to grow legumes of some sort on the land, such as peas, beans, alfalfa or vetch. If you could let the land produce alfalfa for a time it would be the best thing that could happen to it, or if you could raise horse beans, or pease in winter for the stock or otherwise, it would be well A combination of vetch and barley, or vetch and oats, planted as early in the fall as possible and used for hay will be found good, too, as vetch, like all legumes, adds nitrogen to the soil. That is the special value of the legumes. Beets and such crops simply rest the land after a fashion without adding anything to it, while alfalfa, peas and other legumes both give land a needed change and take the expensive and valuable element nitrogen from the air and put it in the soil. In your system of farming you should also, especially in trying to bring a piece of land back, leave as much of the material grown on the soil there to be plowed under as possible. If it can be returned as manure, it is of double value, through helping the animals and being put in first class condition for the soil also. The fact that vetch, when sown with barley or oats for hay, is cut off and removed thus makes it of rather limited value, though better for the soil than oats alone. Therefore in figuring out a rotation for land used so continuously for oats would suggest that you work in all legumes possible, all cultivated crops possible and get everything possible returned to the soil. You yourself can tell best what to raise and how to work the system.

GOPHER INJURIES ON TREES—I have a nice young orchard of cherries and prune trees about five years old; Now, I found some of the best trees just below the ground had the bark eaten off all around the tree. Can this be the gopher, and what is best to save the trees and to prevent the bark being eaten?—H. D., Yountville.

Answer by Prof. W. T. Clarke, University of California—We would say that primarily trapping the gophers should be undertaken so as to remove the cause of the trouble. If the trees have not begun to show very marked signs of distress from the girdling done by the gophers, then it will be a good plan to bridge-graft across the wounded portions of the tree trunk. The process is as follows:

Remove the earth from about the tree so the healthy, ungnawed bark of the main root is exposed. Cut away, with a sharp knife, the jagged edges of the bark, both above and below the girdling and wash off the girdled portion with a solution of corrosive sublimate, one part of the sublimate to 2,000 of water. Immediately after washing with the sublimate, paint the wounded portion with a white lead paint. Get from the same tree, or from some healthy cherry tree in the orchard grafts long enough to reach rather more than across the wounded portions of the trunk of the tree. These grafts should be about the size of an ordinary lead pencil. Bevel-cut the grafts on one side of each end thereof and bark-graft the material in, both above and below the wound. Bark-graft is made by simply slipping the bevel cut graft beneath the bark of the tree. This process, when properly done, gives a slightly bowed, bridge-like graft over the wounded portion of the tree's trunk. It may be necessary to put several such bridge grafts in to obtain proper results. After the grafts have been placed, bind them in situation by using cloth dipped in grafting wax.

HELP FOR SOUTH AFRICA—Will you be kind enough to send me $4 worth of seed, the name of which I have forgotten, but it is a cross between Indian corn and wheat, also please find out where a seed called ensilage can be procured.—J. B., South Africa.

To the best of our knowledge and belief no cross between Indian corn and wheat exists and will not be developed, there being too wide a variation between the two kinds of cereals. Possibly you refer to so-called Egyptian wheat, which is one of the sorghums with rather small seed and of considerable value apparently as a fodder plant. This was recently introduced by the U. S. Department of Agriculture and is not in common use in California as yet, nor commonly carried by the seed houses. However, it seems to have considera promise for California conditions a therefore ought to do well in m of South Africa. This, it will be derstood, is yet on trial and wo suggest that you write to your government for seed in case wish to try it out. Regarding silage" seed, would state that ensil is merely a term for material sto in a silo, whether that be Indian c Kafir corn, alfalfa, or what not. I corn ensilage, alfalfa ensilage, etc. though the abbreviation silage more common than ensilage. In corn belt of the United States ieties of corn have been especially veloped to be used for silage, these are called ensilage corn. Th are not greatly different from ot Indian corn and are not used in C ifornia to speak of.

FERTILIZING VALUE OF SEWA —Could you give me any laformat as to the value of sewage after pass through the septic tanks, as compa with barn yard fertilizer?—E. J. Anaheim.

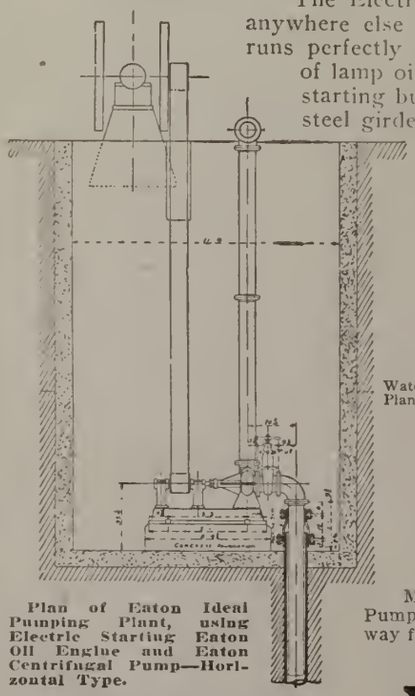
Sewage issuing from septic ta has practically no value as fert and besides, there would be no b of comparison with barnyard man owing to the fact that one is a li of widely varied degrees of c centration and the other a solid. account of the kind of putrefac undergone in a septic tank the n gen compounds are mostly br up and lost, and this is the m valuable part of the material for tilizer. It is true that the p and phosphorus compounds in sewage remain and in some way value to the sewage, but to m than offset this, sewage from a s tank has a poisonous effect on land that makes it an injury r than an advantage. Sewage from point of origin can be on land without injury, but marked fertilizing and other b ficial effects, but sewage from s tanks is undesirable in almost ev respect.

Eaton Irrigating Machinery

LISTEN! FRIENDS AND NEIGHBORS—WHILE I TELL YOU ABOUT THE GREATEST ENGINE IN THE WORLD

The Electric Starting Eaton Oil Engine is a better engine than you can get anywhere else in the world. Simple in construction, no unnecessary parts and runs perfectly on light, medium or heavy load—hot or cold—uses any old kind of lamp oil that you may happen to have around your place. The electric starting button will save you a lame back or maybe a serious accident. The steel girder sub-base is another advantage—you have no foundation to build. And there are many other features. Thousands of farmers, contractors and others have bought EATON engines on trial, the same as you can, and kept my engine because they couldn't afford to be without it. I'll send you my engine on **30 DAYS' FREE TRIAL—NO MONEY DOWN.** Put it right at the hardest work on your place up to capacity, and if it doesn't do the work just send it back.

Electric Starting Eaton Oil Engine Sizes—2 H. P. to 50 H. P.



Plan of Eaton Ideal Pumping Plant, using Electric Starting Eaton Oil Engine and Eaton Centrifugal Pump—Horizontal Type.

WRITE ME. GET MY PRICES AND SPECIAL OFFER

NOTE—Cut out this advertisement and with your Name and Address mail it to me and I'll send by return mail fine Pencil and Penholder FREE.

Eaton Centrifugal Pumps are built in a number of different types; all have special improved runners—a distinctive EATON feature, and are guaranteed to save power to the user. Pumps are water balanced and for belted or direct connection.

"Submerged Type," Eat Centrifugal Pump. Size 1 inch to 12 inch.

My liberal sales policy on Engines, Cream Separators, Pumps, Feed Grinders and Tractors is the "Twentieth Century" way for the farmer to buy. Send for details.

WRITE ME NOW—AT ONCE.

FREE SERVICE DEPARTMENT

W. R. EATON

EATON ENGINE & MACHINE WORKS JACKSON, MICH., U. S. A

Answers for Farm Problems

MANURE FOR ALKALI—Recently I saw where stable manure was being put over some alkali land and was informed by owner that this would do good in overcoming the alkali. As I do not see how manure would make less alkali in the soil, I have been wondering if the manure was not meant only to hide the alkali so that the land could be sold easier. Is this probably the case?—HOMESEEKER, San Francisco.

No, this is not the case at all, most likely, as manure is often a great help in overcoming alkali and an application of manure is often very desirable and beneficial, because it greatly improves the surface of the soil where alkali usually concentrates and does most harm. Alkali rises to the surface in the moisture that evaporates and tends toward forming a crust, which encourages still more evaporation and does still more damage to vegetation. The manure loosens up the surface and both prevents the formation of such a crust and excessive evaporation. In this way the alkali is kept distributed through the soil where usually it will do no harm, and in fact, if not too strong, may be a help, for a trace of alkali is a benefit and alkali land is usually richer than similar land without alkali.

It should be firmly kept in mind that alkali at the surface is the alkali that does damage and one fundamental point is to keep down surface evaporation either by a nice mulch, or by having vegetation shade it; also that a necessity in overcoming alkali is to have somewhere for it to go. All that is necessary is simply to have a loose subsoil for it to sink into. If there is a hardpan so that the alkali cannot sink down, or the water table is so close to the surface that any water falling on the surface cannot sink down and carry the alkali with it, the alkali will be hard to beat and manure will not do much good, but if the water can sink down, manure will loosen up the surface nicely, give water a chance to sink in, and prevent evaporation that would carry the water back again. The work you observed was highly desirable and proper.

Please send me prices of hogs and prices of all breeds according to age.—H. D., S. F.

The price of breeding hogs depends entirely upon the age and quality of the animal, as, for instance, you can buy weanling pigs of any breed, either sex, from $15 to $35 per head, age and quality considered. Bred sows and boars ready for service of any breed can be purchased from $30 to $100 per head. Some breeders charge more than others, but the purchaser should be governed by his own judgment in the selection of hogs.

BREEDS OF SHEEP AND SWINE—Will you kindly tell me the names of all known breeds of lard hogs; of pork hogs; of dual purpose hogs? Will you also tell me the names of all known breeds of mutton sheep; of wool sheep; of dual purpose sheep?—F. C., Half-moon Bay, Cal.

The following are the names of the pork and lard hogs: Chester White, Poland-China, Duroc Jersey, Berkshire, Hampshire, Essex, Chesire and Suffolk.

The dual purpose or bacon hogs are Tamworth and Yorkshire.

The mutton breeds of sheep are Southdowns, Shropshires, Hampshires, Oxfords, Suffolks, all termed the Downs.

The fine wool breeds are as follows: Merinos, American Merinos, Delaines, Black Tops and Rambouillets.

The long wools are Leicesters, Cotswolds, Lincolns, Dorset Horns and Romney Marsh.

The following are the mountain breeds: Cheviots, Blackfaces, Tunis and Persian Sheep.

Every breed is to a greater or less extent a dual purpose breed, in that both wool and mutton combine in making returns. The fine wool breeds are raised more especially for their wool than are the other breeds, and all of the others can be termed more or less accurately mutton breeds, the Downs deserving the term little, if any, more than the others. Of the fine wool breeds the Rambouillets are sometimes termed dual purpose, as a special effort has been made in their breeding to develop the mutton as well as the wool side. Some minor breeds of sheep and hogs, or breeds hardly known in the United States, are not given.

SILO CONSTRUCTION—Is it necessary that the height of a silo should be its greatest dimension? Would it be practical or advisable to lay the silo down; that is, to make it only about nine feet high with five feet in the ground, fill it from the top, have a power-driven screw press at one end and take the silage from the other?—R. W. Eccles.

None of the things you suggest are practical or advisable and for several good reasons, given herewith. It is very advisable to have the silo rather a good height, generally about twice as high as wide. The greatest reason for a fair height is that much more green food can be stored in a deep silo in proportion to volume available than in a shallow one. The green material is rather heavy and if it does not contain sufficient moisture naturally, water is applied so that it will be wet throughout, making it quite heavy. Being heavy, it packs down tight and the deeper the silo, the greater amount of silage in each cubic foot of space. Near the top of a silo silage weighs only about 25 pounds per cubic foot, while at the bottom of a 35 foot silo it will weigh 60 pounds, or over twice as much, therefore the deeper the better, with due consideration for cost of construction, filling and removing feed. It is perfectly true that the height above ground can be reduced as you suggest, by having the foundation well below the surface and this is advisable, the depth below the surface being limited by the distance a man can pitch up the silage properly. There is no occasion for any power press to force the silage to the top, as doors are made along the side of a silo, being opened as the silage is removed. Besides, such a press would be very costly, and a big argument for the silo is its economy. The doors can be seen near the right side of the silo on our May cover. As to economy of feed in silo as compared with hay, a cubic foot of hay in the mow weighs about 5 pounds and in a 30 foot silo a cubic foot of silage averages about 39 pounds, containing more than twice the nutriment of hay in equal space. A very important argument against making a wide, shallow silo is that too much surface has to be fed per day, as three to four inches of silage has to be fed off every 24 hours, or it will spoil, and a person has to guage wisely the size of the silo to the number of cows kept. There are many important features about silo construction and usage and we will cheerfully answer all questions and suggest plans for any conditions submitted by readers.

Try to turn your horse's back to the wind and blanket him when tying him up, as the wind blowing against his breast is apt to lay the foundation of rheumatism, stiffness and similar ailments.

The horse that is all the time being tapped with the whip never knows what his master means by it, and comes to think he means just nothing.

Six pounds of fresh olives are required to make one gallon of the pickled fruit.

"My Armstrong Engine Has MORE POWER Than Its Rated Capacity, and It Goes Right Along Every Day Without Giving Me Trouble."

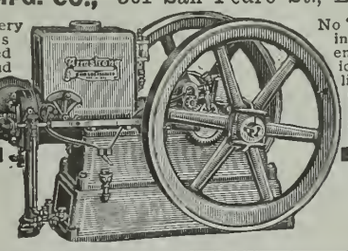
SCORES of letters from owners of Armstrong engines tell the same story of **satisfaction** and **profit.** There's always **power to spare.** The greatest mechanical ignition system ever put on an engine means steady work, small expense, highest possible degree of **efficiency.** Gear-driven **Magneto** furnished with every Armstrong Engine. No batteries to fail. Starting cup makes starting sure in any kind of weather. Extra heavy flywheels produce steady, even running.

Armstrong
Gasoline and Kerosene Engines

were originally built for our own use—the hardest kind of work, that of running well-drilling machines. We **proved** them under these tests, then offered them to power users everywhere. Complete satisfaction has been the experience of every owner of an Armstrong. Armstrong guarantee covers ten years of satisfactory service. **Write for free book**—and ask your dealer to show you this great engine.

ARMSTRONG MFG. CO., 301 San Pedro St., Los Angeles, Cal.

Besides Magneto, every Armstrong engine has our successful speed changing device and spark adjuster, which permits adjusting of spark to exact speed of engine so you get an explosion at the proper moment.



No "back-firing" or "kicking" with an Armstrong engine. Maximum service always. Bearings of liberal length. Hopper-cooling system built especially for this engine. Extra heavy flywheels.

Home Office and Factory, Waterloo, Iowa.

Norman H. Miller, Distributor, 503E Market St., San Francisco, Cal.

Keeps The Motor Cool

Zerolene, as its name implies, keeps the motor cool by perfect lubrication. Even under intense heat and pressure it maintains the desired lubricating film between the wearing surfaces and so enables the engine to do its work efficiently.

ZEROLENE

THE STANDARD OIL FOR MOTOR CARS

is the best auto oil the Standard Oil Company can make—produced by experts of long experience who have studied the requirements of motor lubrication and who have at their command selected crudes and the best refinery equipment with which to produce an oil exactly adapted to meet these requirements.

Dealers everywhere. Ask our nearest agency about delivery in bulk.

Standard Oil Company
(CALIFORNIA)

ORCHARD and FARM
ESTABLISHED 1883
IRRIGATION

VOL. 26 JUNE, 1914 NO. 6

Issued Monthly at Hearst Building, San Francisco, Cal.
Country Life Publishing Co., Publishers
D. J. Whitney ----------Editor

SUBSCRIPTION RATES
One year, domestic postage paid--$1.00
One year, Canadian postage paid--$1.50

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

MONTHLY COMMENT

On August 4, 1913, serious riots occurred on the hop ranch of Durst Brothers at Wheatland, during which four persons were killed. It would appear rather late to discuss the matter, but the condition is forced by the great amount of publicity which is being given the matter from one angle. On February 13 Dr. Carleton H. Parker, executive secretary of the California Commission of Immigration and Housing, rendered his official report to Governor Johnson on the riot and its causes, which was almost entirely a virulent attack on the Dursts. This has been followed by continued references to these conditions in public addresses by Dr. Parker. Something over a month ago Harpers Weekly gave a lurid account of the trial of convicted rioters written by a riot sympathizer, and in the New York Outlook of May 16 another long article on the Wheatland hop fields appeared, written by the attorney for the Commission, George L. Bell. The authorship of the official report and of the Outlook article gives the official stamp of truth to both, and everybody who reads them will naturally believe them correct. If they are correct, it is well that they should appear; if they are not correct, it is a shameful libel on California conditions and an encouragement to riot and turmoil such as Ford and Suhr were convicted of. It is thus a public duty that the truth be told and spread broadcast.

Reports Totally Unjustified. We state here that statement after statement in this official report and the Outlook article appear at least to be totally unwarranted, especially when made by public officials who in theory are impartial and know the facts of the case. Readers can judge for themselves the accuracy of our statements given herewith, and with a firm desire to be only right we welcome correction as to definite facts.

The whole official report is noted for its comparative absence of definite facts and its wealth of argument and opinion. Whatever "facts" given are given only to illustrate conclusions. Nothing whatever is given in the support of different conclusions and it takes only a little knowledge California and hop-picking methods to unravel an amazing mass of inconsistencies.

The Matter of the Bonus. This is a very bitter subject, as extracts from the report will show. Durst's system was to pay $1 for 100 pounds of hops, the picker receiving 90 cents on delivery and 10 cents when the picking season closed. Those who came just for a day or so, or otherwise quit before the season ended, forfeited the 10 per cent retained for the purpose of keeping away unreliable and shiftless pickers. The report says, "If there be a type hop pickers' wage for 1913 in California, it was roughly $1 per 100 pounds of hops. Durst's so-called 'bonus' was really a 'hold-back' out of the normal hop picking wage for 1913. (Notice that word 'normal.') He had no more right to that 10 cents than, etc." Very snide of the Dursts to alter the normal system of payment, wasn't it? Low down villainy, in fact. What the report totally ignores was that exactly this system of payment and this wage had been the ruling price and system on both this and other hop ranches for years, that it was the "normal" wage, and that the system of payment had developed as a matter of necessity, owing to the nature of a certain proportion of pickers and the nature of the work. You never would have dreamed but what Durst had tricked the growers into it, would you? The Recorder, a legal paper of San Francisco that gave the report in full, got quite wrought up over the trickery and has not to our knowledge been corrected You never would have dreamed that the big majority of the pickers on hand in 1913 knew of price and method of payment before they came and had been used to it before they came? Now, would you? There are strong reasons in its favor from both pickers and employers' side.

A "Fanciful Advertisement." We will now quote the report a little more to show how the Dursts tricked (?) unsuspecting pickers to come so that they could work the "hold-back" on them. "In answer to Durst's fanciful advertisements scattered throughout California and even in Nevada, about 3,000 people arrived, etc." This advertisement, or rather poster, is displayed upon the wall of Dr. Parker's office, if after maturer judgment he has not decided to remove it. The fanciful imagination used in preparing the poster can readily be seen when we tell what it says. "PICK HOPS—DURST HOP YARDS, Wheatland, Yuba Co., Cal. EARLIEST AND BEST PICKING IN THE STATE." In small type it is said, "The going price paid for clean picking. A BONUS to all pickers helping us and doing satisafctory work, to the completion of the picking—a period of three or four weeks." Then follows a number of details which we do not expect will be held up as fanciful. Persons who wish definite knowledge as to the fancifulness of the poster can doubtless be given a copy of the poster by Dr. Parker, or even by Mr. Durst. This poster, by the way, was printed and used in 1911, a change being made only in date of picking.

Tents and Accommodations.—In view of lack of tents and accommodations and a charge of 75 cents per tent told of in report and Outlook article the following from the poster will be significant. "TENTS—Government conical tents are offered for rent at 75 cents per week; as the supply is limited, persons desiring tents should apply at once." For a fair and impartial official report, this extract from the financial advertisement is lacking

Toilets the Main Trouble.—Lack of toilets was, after all, the fundamental point of the whole fuss. The report guessed at nine and stated that there were not more than 11 or less than eight, two holes per toilet. Why, a skilled investigator with time galore couldn't tell accurately the number. We don't know, but the explanation is very significantly given, when required, that toilets were being erected both before and after the riot and it was impossible to find which was which. In other words, the main cause of complaint was rapidly being remedied before the riots occurred, although very significantly, not a word of this is breathed in the official report, nor in the article sent to the New York Outlook. Why this pivotal point was entirely ignored in a report supposed to be official and therefore impartial and accurate anybody who wants to volunteer can explain.

Toilets were befouled badly. How badly is open to question with the apparent bias and inaccuracy of public statements thus far. However, approximately that number of toilets had served in previous years and the number completed by Saturday night, which seems to be 13, closely approximates the I. W. W. demand of one toilet for every 50 people, provided two holes figure as two toilets. Dr. Parker also states that a big proportion of pickers were foreigners or a poor quality of white labor of very indifferent habits of personal cleanliness and morals. Since the I. W. W. agitators were bound to prove the toilets inadequate it might be supposed that they determined to make them so. However, we don't want to accuse anybody wrongly, and since the Dursts were doing what they could to straighten matters out it is entirely beside the subject to quibble. It is more than unfair to ignore the new toilets, but the whole argument would crumble if they were told of.

The Water Problem. It seems time to quit or everybody will believe it impossible that an official statement of a supposedly impartial investigator could be so far off from the truth, but since water supplies were a strong reason for the trouble it is well to say a few words on the matter. The report ignored utterly the amount of water there was, but was quite lengthy on the amount there wasn't, leaving the reader wholly at sea as to the actual extent of supplies, even supposing they were short. "The wells," it was said, "were absolutely insufficient for the camp. Two of the wells (so you see there were more) were often pumped dry by sun-up, and the campers were forced either to go to town for water or to distant wells among ranch buildings." How far the ranch buildings were from camp cannot be guessed any better than the number of wells, while the fact that there were hydrants containing city water and that the camp was adjoining the town of Wheatland and city water somehow or other was overlooked. They could not have been mentioned without undermining the charge.

Misrepresentation, or suppression of fundamental facts that entirely alter the aspect of affairs, thus appears on practically everything vital to the question: method of payment, accommodations, toilet facilities and water supplies. The thing can be continued down to a hair-splitting basis, which is undesirable and unwise. Statements ignored are not admitted.

A Difference in View. Dr. Parker and those who have adopted his attitude will probably continue in a firm and conscientious belief in the justice of their stand, for argument rarely changes opinions once a person has publicly committed himself. Nevertheless it is but fair to the public that both sides of a matter be given fairly and impartially. Dr. Parker has apparently taken the attitude that things were wrong and needed fixing, without reference to whether they were workable and apparently very satisfactory to everybody in previous years or not, and that it was up to him by virtue of his position as executive secretary of the State Commission on Immigration and Housing to settle them. In fact, in view of statements at the conclusion of his report, in a letter sent out with bulletin quoted on page 4, and numerous public utterances, this idea seems to be the real explanation of his whole stand on the matter. Such an idea is natural, owing to Dr. Parker being yet a young man and having spent possibly an undue amount of time in study both in Europe and at the University of California, where he teaches the theory of economics to the students. Reformers frequently take the view that because a thing exists is no excuse whatever for it. Practica men know that the existence of custom is the strongest kind of evi dence (though, of course, not proof that it is at least required in larg part by circumstances. It is easy t find fault, horribly hard to wipe ou a method and establish somethir better in its place. Reform comes b practical experience and good feelin not by hot-headedness and ill feelin

Self Conviction. Granting tha things which could be remedied con veniently were wrong, a tribute t conditions at the hop yards was un consciously paid by Dr. Parker in hi report, when he said regarding th pickers: "Many families were of th better class and had been in the habi of using the hop and fruit seasons a their *country vacation*." The italic are his. We do not believe the would have come if conditions wer anything like those described i the official report. As it is know all over Northern and Centra California that hop picking is con sidered an excellent way of mak ing pin money and having an outin the report must have shown cond tions that were very much out of th ordinary to say the least, though w judge from his report that Dr. Par ker considers them typical. The bes explanation of the riots seems to b that the I. W. W.'s went in to rais hob and they did it, being helpe along by the exceptionally ho weather, a rather greater crowd tha usual, and possibly a greater propor tion of foreigners and undesirables i the crowd. It is only to be hope that they are not helped further b the kind of support being given them

How the attitude of Dr. Parke and Attorney Bell have warped thei accuracy of statement is shown i the "Outlook" article, where it i stated, "Later, at 5 o'clock, a large meeting of *practically all* the pick ers (italics ours) was held at th dance platform." Dr. Parker state the crowd to be of about 1,500 peo ple, and judging from other state ments of his this is a generous est mate. Mr. Bell states that "abo 2,800 men, women and children were employed as pickers. Abou half seems to be "practically all," an remember that this was at the cam at Sunday evening when practicall all the crowd would be expected t be around and attending whateve was likely to be doing.

Improvement Welcomed.

In order that actual improvemer be made, we will state that we depr cate ill feeling and hope that th matter can rest, and believe that th commission of Dr. Parker's can d some excellent work. By ration regulation and inspection of labo camps, conditions can be made t change for the better. Californ methods, perhaps, are a little to loose, as is shown by the Englishma who got a job on a grain ranch year ago, expecting English housing, bed ding, etc. As darkness wore on an nothing was said about accomoda tions, he approached the foreman an asked where he was going to slee "Hear him talk," shouted the fore man, "5,000 acres before him and h wants to know where he is going t sleep!" Reformers should realize th such conditions are expected in Cal fornia by all concerned, and a man i supposed to be capable of lookin after his necessities, but it is equall true that the better living and work ing conditions are made, the bette for both employer and worker an the less public support the I. W. W agitator can gain, though, as a ma ter of fact, that statement seems ope to dispute. The bulletin issued b the Commission and told of on pag 4 shows a step in the right directio It might be better if "should" we used oftener and "must" less ofte especially with new inspectors on new job, under rather over-enthusia tic direction, for varying conditions

(Continued on Page 27).

California Aspects of the Breeds

Shorthorn Cattle

The old red, white and roan which has blazed the bovine trail for all the other beef breeds to follow, looms up again with a world's record to her name. At a recent public sale in the Argentine Republic the Shorthorn bull, Americus, was sold for the enormous sum of $39,083, a world's record.

Merry Ravenswood III, the dam of Americus, was bred by C. E. Leonard of Bunceton, Missouri, she by Royal Hampton 177807 out of 2d Lavendar Lassie, by Lavendar Viscount 124755. Six generations on the dam's side of this great, young bull have been bred by Mr. Leonard, tracing back to the imported cow Charming Rose. Americus was examined by some of the most critical judges in the world, both from the Argentine Republic and Great Britain and the universal decision was that he was one of the best of the breed that has ever been seen.

United States, as well as Missouri, should be proud that such a Shorthorn dam has been produced here. Heretofore South America has been going to Scotland and England in quest of good Shorthorns, but predictions are that the wonderful record made by Americus will do much toward attracting their attention to the United States.

Several years ago the writer had the privilege of buying a son of the great Lavendar Viscount to head the herd of the Howard Cattle Company of San Francisco, Cal. This young bull stood first in his class as a yearling at the American Royal Show at Kansas City and was one of those heavy-meated, thick-fleshed, smooth, low down type, the kind that has made Shorthorn history. His impress in the Howard Cattle Co. herd will remain as long as that company is breeding Shorthorns.

The Shorthorn breed has had many setbacks in its long and wonderful career, the first and most serious being caused by breeders regarding quality of bone their chief and only consideration, the result as was to be expected, being disastrous.

Next came the color craze, according to which no Shorthorn was up to the standard unless he was a solid red, and many of our very best and influential herds were ruined by inbreeding to maintain this color. It has taken a quarter of a century to repair the injury which has been done by these fads and to re-establish the Shorthorn as the leader of the beef breeds.

Can it be true, or is it a fact that another fad is about to come into vogue among Shorthorn breeders, namely, making the Shorthorn a dual purpose cow? It is to be hoped that the men who are responsible for this movement will retrace the steps which they have already taken along this line, and decide once and for all that the present day Shorthorn is a beef animal, and never can be made anything else. True this breed inherits great milking qualities, but this is hereditary.

Every third or fourth farm in the great corn-belt section of this country is producing Shorthorn cattle and the chief reason for this is that we need better beef and more of it. Many of these farms receive the daily milk supply for household purposes from a herd of registered Shorthorns, as these cows have been so developed that they usually give more milk than their calves can take for the first three months. They are not dual purpose cows, for many of them are producing bulls which to-day are making Shorthorn history. They are good milkers because good common sense has been practiced in the development of the herd to accomplish that which the Shorthorn was intended for. Any breeder of Shorthorns in this country who claims that his herd are dairy Shorthorns and is using the general run of Shorthorn bulls, registered in the American Shorthorn Herd Book, has a mistaken idea of dairy cattle. The Shorthorns which are being run as dairy herds are pulling down the breed from its present high state of efficiency. The bull crop from these Shorthorn dairies are usually neglected and poorly raised, and are therefore sold much cheaper than the well cared for crop of bull calves; the price being low, range men pick them up and the result is unfortunate wherever they are used.

The dairy Shorthorn is practically a breed in itself. It can be found in large numbers in Great Britain, but is used exclusively as dairy cattle, and competes with other dairy breeds for all the honors which are due them. There are one or two of these herds in this country and Canada, but they are few and far between, and those who expect to breed Shorthorns along dairy lines should be sure they are right before they go ahead.

Long may the red, white and roan roam over the land he has pioneered and may all glory and credit rebound to the men who have persistently held that the Shorthorn leads and all other beef breeds must follow.

That the Pacific Coast in general is well adapted to the raising of Shorthorn cattle is verified in every respect by the thousands of grade cattle that roam the ranges and by the grade dairy cows in the valleys of California. Seven-tenths of the range cattle and most of the grade dairy cows are Shorthorns, but the registered herds are few, and can almost be counted on one's fingers.

The demand for registered bulls is at present very general and those de-

(Continued on Page 20).

Shorthorn Matrons of Fine Type and Breeding, Owned by Howard Cattle Co.

QUALITY
BERKSHIRES
OUR BERKSHIRES ARE NOW BETTER THAN EVER.
They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.
Send for Catalog.
Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

HALLWOOD FARMS
Breeder and Importer of
SHORTHORN CATTLE
Address E. M. HALL, Carthage, Missouri.

HOWARD CATTLE COMPANY
Breeders and Importers of
SHORT-HORN CATTLE
55 New Montgomery Street San Francisco

RAVENSWOOD HERD SHORTHORN CATTLE
ESTABLISHED 1839
Herd Numbers 140 Well-Bred Scotch Animals Headed by Marengo's Choice 353873, Assisted by Wood Dale Stamp, a Son of Imp. Clara 53.
CHAS. E. LEONARD & SON, Proprietors.
ED PATTERSON, Manager.
Bunceton, Missouri.

UNITED STATES
Cream Separators
LEAD
Under Any Conditions

For the reason that:

There is as much difference in efficiency between U. S. Skimming Sections and all other skimming devices as between the Twentieth Century Limited (20 hours between Chicago and New York), and the average passenger train (25 hours).

The U. S. Bowl is a marvel of perfection because of its ability in the average dairy to save in closer skimming from $50.00 to $100.00 each year (15c to 30c each day) over all other separators, and because it can be cleaned in about one-half the time of other separators, and easily kept perfectly sanitary always.

The U. S. Separator is the only Separator having the non-rusting Nickel Silver Metal which is non-adhesive like glass or ivory, easier than other devices to clean by ordinary methods and immensely easier by the Mechanical Washer.

The 1914 Sanitary Liner for bowl chamber supplies the most sanitary equipment. Iron is quick to rust when milk touches it. This is why other separators become insanitary. Milk cannot touch the iron bowl chamber of the U. S. for the liner prevents.

The U. S. Separator separates thick cream when desired, and at the same time **skims clean.** This is a hard test, and under it all other separators skim poorly, and some clog. The advantages of thick cream are many.

There are many cream separators outside the class of so-called "cheap separators" which in reality, like poor cows, are "star boarders" because they have not the ability as has the U. S. to meet perfectly the variations found in every day conditions in the average dairy.

The U. S. Cream Separator is in a class by itself.

It holds the World's Record in the longest and hardest fought world's contests. This statement cannot be successfully denied for the proofs are on record.

SEND FOR OUR NEW 1914 CATALOG
THE VERMONT FARM MACHINE COMPANY
Chicago Salt Lake City BELLOWS FALLS, VT. Portland, Ore. Los Angeles

The Best Alfalfa for Cows

Nothing apparently would be simpler than knowing when alfalfa should be cut, but there is lots of alfalfa hay that is mostly woody stems, so people often get a very inferior product unnecessarily. Instead of this being a hackneyed repetition of old rules, it is rather an account of the practices of alfalfa handling on one of the best dairies in irrigated California.

The whole dairy practices here have been so successful that they required careful thought and observation for every detail, and results on the dairy indicate that the alfalfa cutting and handling must have been along right lines. Hay making methods are so different from the ordinary that when home raised alfalfa has run short and more has had to be purchased it has been extremely difficult to find a lot that was up to the desired standard of quality. The same thing has been true with other dairymen who buy much alfalfa and give care to its selection. The dairyman who feeds only alfalfa hay alone should be particularly careful about his alfalfa, and these methods ought evidently to be widely practiced.

In the first place, the alfalfa is cut very early, perhaps a week earlier than average. A commonly stated rule is to wait until the shoots begin to sprout from the crown and the plants are one-tenth in blossom. On this place the alfalfa is cut before any shoots have started or any blossoms are out, though buds may have started. This gives two big advantages. The stems are tender and highly nutritious and the leaves, which are the most valuable part of the plant by far, hang on very much better than they do on older alfalfa.

There is a loss in weight per cutting, for most weight is gained in the latter stages of growth. On the other hand, there is so much less time between cuttings that this loss is largely overcome, possibly altogether overcome, by getting an extra crop. This would especially be true if cutting were delayed, as it so often is, until the tops of the shoots are nipped off by the machine, for this delays the growth greatly.

Furthermore, the last gain in weight is largely of woody and not digestible material, and it is the latter only that counts. And, finally, since most of the leaves are lost when the stems get woody, what one gains in gross weight he more than loses in the leaves, which are the best part of the plant, so the margin is altogether in favor of early cutting.

It is claimed on this place that there is no delay in sprouting on account of early cutting, but that the fields green up right away after the hay is removed.

Aside from the time of cutting, there is much to be said about the methods of handling. The aim in this direction is to save every leaf possible. Nothing helps so much to do this as a little dampness. The alfalfa itself can be cut at any time, but it is never handled after cutting unless there is dew on the ground. Cutting is usually done in the afternoon and raking and hauling in the morning. Part of the curing is done in windrows. If there happens to be a north wind, so that there is no probability of dew, the alfalfa is not cut until calm weather comes again. Owing to the usual early cutting, it is thus possible to wait several days after the usual time without materially affecting the quality of the hay.

After all arguments pro and con have been made, the fact stands that there is little advantage, if any, of weight and nutriment in late cutting, and when it is found by practical experience of successful dairymen that it more than pays to see that the cows have the best quality of hay possible, early cutting practices win the honors.

That is, of course, for dairy cows. Horses, on the other hand, want hard, dry feed. Alfalfa at the best of it is too loosening, and woody stems are better for horses than soft, green hay.

Hogs run to the other extreme, and some of the most successful hog men who use alfalfa hay for their hogs claim that it should be cut when only about half grown and very green and soft, salted down well and fed that way. Hogs and alfalfa pasture were made for each other, but not hogs and alfalfa hay, so the softer and finer it is the better. Each animal needs special attention and handling, and special attention is the thing that wins.

Good Holstein Cows and Good Alfalfa on a Modesto Dairy.

California Counties at the Exposition

Prepared for Orchard and Farm

The one thing in which the California farmer has most interest in the Panama-Pacific International Exposition is the counties building and the counties exhibits which will center very largely, though not entirely, in that building. A special tax has been laid for the counties which will make $1,500,000 available, and since the cornerstone of the building has been laid and work has begun to show well on the building, all the counties can well begin to ask just how they are to be represented. Only eight months remain in which the display of California's diversified industries may be gathered and installed.

The California counties building and the little park which surrounds it will occupy seven acres of ground, situated to the northwest of the two monster palaces devoted to agriculture. About 5.5 acres will be covered by the building, which is 675 feet long and 355 feet in width. Two stories in height, it will afford ample space for a magnificent and effective display, if the exhibits are wisely prepared, but if too much is put in by the counties, and that without relation to what other counties are doing, the result will be more or less of a jumble and lot of small exhibits rather than one fine systematic display.

Such an event can be largely avoided by wise selection by the counties of their exhibits, then the placing of the different kinds of exhibits in different buildings if they do not particularly belong in the counties building, and lastly by trying to make the building as much of a California building as possible, to show the industries and possibilities of all California.

Agriculture Leading Feature.

While it is true that all industries of the State will have to be well represented, it is decidedly a fact that the main emphasis for the California counties should be on agriculture, for agriculture and mining are the two things, outside of climate, for which California is particularly famed, and the climate bears a close relation to agriculture.

The idea of a county should evidently be to put its leading manufacturing exhibits in the manufacturing building, the mining exhibits in the mining building, perhaps much of the agricultural and horticultural exhibits in the buildings for those purposes, though emphasizing the characteristics of the county, whatever they might be, to the best advantage. Thus, a county noted for its mines would naturally center its efforts on ores and other things connected with mining. While it would use the county building largely to show typical conditions, it should put the features to attract investment in the mining building, for visitors with direct interest in mines would make a business of examining exhibits in the mining building, and their interest in the counties building would be more general.

The same thing will hold very largely true with manufacturing exhibits, which in certain respects merit only minor attention in the counties building. Manufacturing is not a leading feature of California life, nor will manufacturing exhibits show California climate, natural California products, or typify California and her counties in more than moderate degree. Manufacturing is done far more in other States and climates than in California and emphasis laid on California manufacturing by any county will indicate to the visitor that the manufacturing, which might be done in less favored climes, is more to be emphasized than those agricultural industries which manufacturing districts generally cannot have. It is true that factories are earnestly sought by cities and counties, and rightly, and they are desirable agriculturally in developing local markets, but in the opinion of the writer manufacturing exhibits should be centered primarily in the manufacturing building and the county building should have mainly maps, diagrams, and other means of emphasizing favorable manufacturing facilities as a supplement to agriculture, mining, lumbering, or whatever is the leading industry. Then that part of the display in other buildings, manufacturing, mining, agriculture, etc., could be told of by placards or otherwise, and the visitors interested mostly in one thing could examine it in its proper department.

Even a county which wanted to

Reasons for High Testing Cream

One of the interesting features of the argument in favor of getting high testing cream is that it means no extra work at all, and the means of obtaining it are simple and clear to everybody. The advantages of fairly thick cream are also altogether in favor of the producer and a help to the creamery besides. Some of the arguments in its favor are given in detail in Kimball's Dairy Farmer in striking form.

As hot weather develops the reasons increase in importance and they should be given attention. This account says:

When a dairyman has his choice of shipping low testing or high testing cream, it is generally best to choose the high testing because of the more skim-milk left on the farm and the saving in freight charges. Any standard separator should skim accurately whether the cream screw is turned to run out a 20 or a 40 per cent cream.

The value of the skim-milk saved is no small item. If 300 pounds of 4 per cent milk is skimmed into a 20 per cent cream, the farmer will be selling 12 pounds of butter-fat and 48 pounds of skim-milk. If the same milk is skimmed into a 40 per cent cream, he will be selling the same amount of butter-fat, but only 18 pounds of skim-milk, leaving him 30 pounds of skim-milk for feeding on the farm. This can be turned into property by feeding to hogs or calves and in a year will amount to quite an item.

The transportation charges of the smaller weight should be considerably less, whether it is hauled to a creamery or sold to the city trade. Of course, some markets, for example the ice cream trade, prefer a cream testing not more than 20 per cent. Even in this, arrangements can often be made for selling a high testing cream. If the ice cream manufacturer knows the test he can dilute it to the desired standard by the addition of whole or skim-milk.

Thick cream can be kept sweet longer than thin cream, which is another advantage worth considering. Sour milk producing bacteria attack only the milk serum and naturally the less proportion of this to the butter-fat, the less likely the cream will be to sour. This will make it more desirable for the dealers as well as the producers.

Buttermakers at creameries know a better quality of butter can be made from high testing cream than from thin cream. In many creameries a higher price is paid for the butter-fat, which is one of the best methods of getting farmers to deliver this grade of cream. They can afford to do this because more can be obtained for the butter and the churn gain is greater.

Most farmers who make butter at home skim too thin a cream for best results. What is lost in the skim-milk will be saved in the butter-milk, but thin cream will not make so good a butter as thick cream. It is difficult to ripen low-testing cream properly in hot weather or to keep it so long a time for churning. If thick cream will not fall in the churn, it may be diluted with cold water to the proper consistency which will overcome all difficulties iin churning a thick cream. As a general rule, however, a thick cream will churn better than thin cream.

In sending high testing cream to a creamery, one should be sure that the cans are rinsed out after the cream is emptied so that no loss will be caused by cream adhering to the sides of the can in which it is delivered. It should be mixed thoroughly before a sample is taken for testing. As accurate results can be accomplished in testing thick cream as light cream. It is not advisable to skim a cream that will test higher than 40 per cent.

emphasize manufacturing would injure the total effect if it would have a moving exhibit, for visitors would "watch the wheels go 'round" in idle curiosity rather than attending to interesting exhibits of other counties near by. Such exhibits for the good of the State should be only in the manufacturing building.

An Harmonious Whole.

A fine ideal would be to have the visitor going from Imperial and San Diego to Siskiyou county exhibits realize instinctively the kind of climate and soil that existed and the main features of life in different counties. Imperial would have her dates and cotton, her cantaloupes and early fruit, her continuously green alfalfa and other features that would emphasize climatic uniqueness. The visitor would see the oranges and other products of central Southern California, and the fact that lemons, late Valencias, lima beans and apricots were particularly valuable along the coast from Santa Barbara south would show still different conditions there. When you impress the visitor with the reason for an industry you have accomplished the main idea.

Thus Tulare, Butte and other northern counties would specialize horticulturally on the oranges and olives, Fresno on her raisins and peaches, Sutter on cling peaches and Thompson's seedless raisins, San Joaquin on her products of her delta country, Santa Clara on her prunes, Sonoma on her poultry industry, Gravenstein apples and Healdsburg prunes, and other counties on the things that were of particular value to their citizens. Of course, there would be many other products besides those named.

However, with the stress laid on all industries in the right proportion, and efforts being made to show the reason for the importance of the various industries, the visitor would know California better by far and be attracted more by far than when the arrangement was made by each county as if it were trying to get up a massive bouquet, so to speak, of everything possible grown without regard to importance to the county or influence upon the homeseeker on visiting the county in the way of business. So many counties can make striking and varied displays that visitors will only be confused if they all try it and they will go from one display to another with wonder, but not the investigating interest that really counts.

Livestock Not Neglected.

In considering the county exhibits, livestock must be strongly emphasized and a radical and fundamental change made over previous methods. Dairying, horse raising and other kinds of livestock production have a far larger attraction for the homeseeker who knows farming than has fruit, and in county exhibits at the State Fair and otherwise it has been practically ignored up to this time.

For example, practically the only livestock display at the Land Show in San Francisco last fall outside of a cheese or so, a few squares of butter, a miniature bale of alfalfa hay, some few photos, and such things, was a fire horse displayed by the Humane Society and some bedraggled hens which were disposed of by raffle. The biggest crowds at the show were around both the horse and the hens.

How much emphasis can be put on stock at the counties building cannot be said, but a model dairy farm with pumping plant or irrigating canal, barns, cows, pig pens, alfalfa field with mower and stacker at work would make a big hit, and act like a magnet for the county. In fact, methods, the ways of doing the things that count in the counties, and displays of the leading products in proper proportion should be the leading features of the county displays. To get that result there should be an effort made to treat all the exhibits as one, to work together for a California building as much as a counties building.

Visitors are going to come almost as much for California as for the exposition and it is proper to say that the counties building, with the horticultural, agricultural and livestock departments as a whole will be the greatest part of the whole show.

Waterproof Concrete

Concrete may be made practically waterproof against a hydraulic pressure of 40 feet. The materials should be proportioned so as to make a dense mixture; that is, with all spaces between the particles of sand and gravel filled with Portland cement. It should be made wet and sloppy so that the particles will flow into position without tamping. After it has been placed in position it should be well spaded against the forms to remove all air and thus prevent the formation of pockets.

The Use Of Hercules Dynamite On Farm, Orchard and Ranch

HOW much do you personally know about the use of dynamite? Have you ever used it? If you have, have you used it to the fullest advantage? Have you made it do all the work of which it is capable?

With Hercules Dynamite you can plant trees, drain land, dig ditches, remove rocks, subsoil land, excavate cellars, cisterns, etc., and do many other things that space does not allow us to list. In the great majority of cases you can do all of these things more quickly, more thoroughly, and with less expense by the proper use of dynamite than by any other method.

The place that dynamite is taking on the farm is growing bigger and more important every day. The man who is engaged in agricultural work and who has not thoroughly familiarized himself with this comparatively new factor in such work is not doing himself justice.

For your own benefit write for a book we have just published, called "Progressive Cultivation." It gives much information that many men now have at their finger tips and find almost invaluable in their daily work. Use the coupon below.

HERCULES POWDER CO.
Chronicle Building,
San Francisco, Cal.

Please send me a free copy of your book, "Progressive Cultivation." I am interested in Dynamite for

_____

_____

_____

Better Crops

The results that may be obtained by improving soil by the use of dynamite are sometimes almost unbelievable.

The illustration shown above is an accurate copy of a photograph. Half of the field in question was sub-soiled with dynamite. The other half was not. Corn was then planted. On the sub-soiled portion it came up vigorous, strong, growing higher than a man's head. On the other half of the field—the picture tells the story.

This is not an insolated or even unusual case. The same thing has occurrred thousands of times in different parts of the country and with crops of various kinds. Has it happened on your farm? "Progressive Cultivation" tells how these results have been obtained. It tells how you may obtain them. Read it.

Time and Labor Saved

Have you ever dug a ditch across overgrown or swampy land, through ground full of rocks, roots, and stumps? If you have you know what it costs in labor and time—*when you dig.*

When Hercules Dynamite is used there is a different story to tell. Instead of removing every pound of dirt by hand, struggling through underbrush, tugging at roots and stones; a few charges are planted, connections made, the charges fired — and there's your ditch. Finished in minutes instead of hours, or hours instead of days. Furthermore, it is a better ditch than could ever be dug by hand.

The illustration shows a ditch blasted through land that was heavily overgrown with brush and badly obstructed by stones and roots. Hercules Dynamite simply lifted everything at once. The ditch was finished.

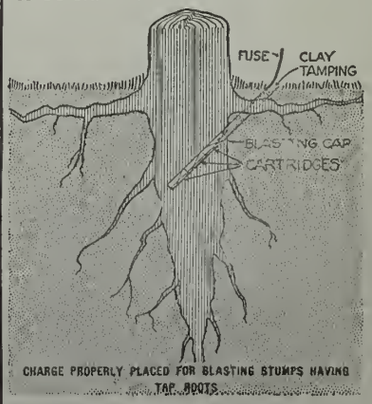
Clearing Land

Hercules Dynamite may be used in several ways to facilitate the clearing of land. It gives invaluable aid in the removal of rocks, stumps, and standing trees. Work that ordinarily would take a gang of men and several horses many days to accomplish can be finished in half the time when dynamite is used.

To accomplish this saving in time and effort, the main requirement is that the man in charge know how to use his dynamite to the best advantage.

Land clearing usually calls for the use of several different methods, each one of them simple in application, valuable only because each serves a particular purpose.

A rock may be removed by use of mud cap, snake hole, or block hole, depending on size and location. Some stumps and trees have tangled spreading roots, others heavy tap roots. The manner in which the charge of dynamite is set and the amount used depends upon the kind of stump or tree to to be blasted.



In "Progressive Cultivation" these various methods are fully and accurately described. Every man who takes a real interest in his property should have this book. If you have no copy write for one.

Success With Calf Raising

Heifer calves on a good dairy go quite a ways toward boosting the net returns. Properly handled, fewer calves will perish, for one thing, and for another, those that survive will make much better cows than calves which run the gauntlet of scours and other physical disturbances. Calves are delicate things and even the best of dairymen have trouble with them. Those that are not the best have lots more trouble, and right methods combined with careful attention are required if a success is to be made.

Some time ago we told of the leading dairy methods on the A. W. Morris dairy at Woodland, in which it was mentioned that generous feeding and care were the rule from birth up. Details on calf raising will be interesting.

The calves are with rare exceptions not permitted to stay with their dams, but are removed to a calf barn with other animals six weeks old and under. While here they are fed whole milk only. The first few days the milk of the dam is given and after that whole milk from any cow, or bunch of cows. It is fed at body temperature, three times a day, eight hours apart. The calves also have oat straw to chew and they are taught to eat grain as soon as possible.

Care is taken not to overfeed. Only the largest calves get as much as four pounds of milk a day at the start and small calves get only three pounds. If a smaller breed than Holsteins were kept, still less would be given. Each calf has its own stall and bucket, which, of course, is kept thoroughly clean. A strap is attached to the neck of each calf and he is tied in his stall at eating time.

The horns of heifer calves are killed with caustic potash, which is applied in a few days after birth. The hair is cut off and the skin scratched to let the potash work in. Since many dairymen want horns on their bulls, bull calves are not dehorned.

The clean feeding with moderate amounts of milk has overcome trouble from scours entirely. However, as the site of the dairy is low and flat and the soil heavy, it gets pretty muddy in winter and pneumonia used to be a great trouble. This has been overcome by building a special calf barn for winter use. This barn has the floor elevated about six feet off the ground, so that it is kept good and dry, which is the reason for building it the way it is. Inside the floor is kept well covered with clean straw, which is changed frequently. There is also a little platform upon which the calves can go when the weather is clear. Last winter was the first for this shed, which is inexpensive, and pneumonia gave practically no trouble at all. Thus the only two important calf troubles have been overcome. When the ground is dry this calf shed will not be required or used.

On reaching six weeks of age a calf is removed to another barn and yard to associate with animals up to about three months of age. He still has his private bucket, but is fed only twice a day and the amount of whole milk is gradually reduced through the addition of skim milk, so that before long the calf gets no whole milk at all. However, it has been found that skim milk is very valuable for calves, especially pure-bred animals which make good returns for everything done to promote their welfare, and when skim milk is available it is fed in greater or less amount for ten months or so.

This second installment of calves also gets some grain and has plenty of good hay, both oat and alfalfa.

At the age of three months the calves are able to look after themselves pretty well and have pasture with good care and attention until they are about ten months old. Then they are given the same pasture with yearlings and young stock up until it is time to give the special attention that is desirable before calving. The bull and heifer calves are separated when about five months old. All along they get all the good food that they want, for as long as there is nothing to make a calf or young animal fat everything they put inside them will go to bone, muscle and strength and build up vitality and fitness for the heavy service that a high-class dairy cow should give.

Cleanliness, warmth and dryness, the right kind of food and enough of it are the things that keep sickness away from the calf herd and make fine animals.

Success With Calf Raising

(Continued from Page 17).

siring to purchase same have only the few old breeders to look to, who for years have fought the battle for good stock. Chief among these breeders are the Howards, Gibsons, Glides, Rushes and a few others. It is a fact that there are only twenty men in our State who are members of the A. S. B. A. and only half of them are actually engaged in the business. For many years this falling off of Shorthorn breeders was due to the fact that at one time the California beef market was the lowest in the Union, and another reason that the tick infested country reached almost to San Francisco bay. The former cause has, of course, entirely vanished, and thanks to the very efficient efforts of our State Veterinarian, Dr. Charles Keene, and the U. S. Bureau of Animal Industry, the tick has almost entirely disappeared from our State.

More and larger pure bred herds of Shorthorns are needed, as shown by the large number of Eastern bulls shipped this year for use in the State, and it is a fact that at the present time there is not a pure bred bull fit for service, owned and bred here, for sale by any of our Shorthorn breeders, as all their products have been disposed of. The writer knows of cases where about 230 Shorthorn bulls are required for our Northern ranges at the present time, and the solution of the problem as to where to find these bulls, is in the East. This gives an excellent opportunity for new and larger herds in California.

California has the land, the climate and the feed, but the breeders are few. At the present time there are over 100 boys at the State University Farm at Davis, and the State's Shorthorn herd is inferior to both the Hereford and Angus breeds.

It is unfortunate that this great cosmopolitan breed should be so neglected when seven-tenths of all the beef cattle on the Pacific Coast are Shorthorns. True the Hereford has great grazing fleshing qualities, but does not the Shorthorn come from behind with his weight? Dollars and cents are the object, and the scales tell the tale.—W. M. CARRUTHERS.

Warts on Cows' Teats.

Where cows' teats are affected with warts, if the warts are elevated considerably above the skin of the teat, they should be clipped off and the cut surface should be painted with silver nitrate. The best time to remove warts is during the time the animal is dry. The teats are not handled during this time and healing could easily take place. See that the teat is well cleansed with some disinfectant, then use a good scissor or sharp knife to cut off the warts, and immediately paint the wound over with silver nitrate. It may be necessary to apply the silver nitrate a number of times every day for a few days in order to entirely overcome the trouble.

50 Cows Average 717 Pounds Butter

This is the average of the 50 cows that have completed yearly semi-official tests to date in our herd.

Did you ever consider what it would mean to place a young bull in your herd, bred in lines that are producing these results? It will mean increased production and value for every animal in the herd. He will produce the kind of stock that are in the greatest demand at high prices.

INDIVIDUALITY, PRODUCTION and TRANSMITTING ABILITY are essential in the choice of a herd bull. These are the qualifications of the young bulls that we offer as low as $150.00.

Engage your calf for use next fall. Your inquiries will be given prompt attention.

A. W. MORRIS & SONS CORPORATION

Holstein Friesian Cattle — Woodland, California

HILLCREST STOCK FARM

Importers and Breeders of

SHORTHORN CATTLE, SHROPSHIRE AND MERINO SHEEP.

FOR SALE, SPECIAL, at this time

Splendid Registered and Unregistered Shropshire and Merino Rams,

IN LOTS TO SUIT PURCHASERS.

Address THORNTON S. GLIDE, Davis, Cal.

This is "Brendel's Beauty," No. 56072, Grand Champion Sow, Chicago International, 1913.

Her sire is "Jim's Dandy," sire of Gr. Champ. barrow of all breeds at International of 1911.

She is bred for May farrow to our herd boar, "Patternmaker," No. 26677, likewise a winner at 1913 International. He is a wonderful young boar, bred in the purple. His dam is a wonderful brood sow and was Indiana Gr. Ch. 1912.

BRENDEL'S BEAUTY INTERNATIONAL GR. CHAMPION COMES HERE

We have also added to our herd of brood sows, **Dolly Varden, 22nd, No. 53998, Gr. Champ. Sow, Indiana State Fair, 1913.** These two sows are refined, but each weighed over 500 pounds under one year. **Our broodstock is bred in the purple.** 1913 farrows all sold out. A fine lot of 1914 spring pigs now on hand and to arrive. Also young bred sows. Farms in Yolo and Santa Cruz countles.

Address all inquiries to

BRUCE CORNWALL,

914 Kohl Bldg. — San Francisco

CHESTER WHITES BEST

DORSET SHEEP AND HOLSTEIN CATTLE

One of the oldest and largest breeding establishments in the East. Our specialty: High-Class Show and Breeding Animals. Stock for sale. Write for prices, etc.

TRANQUILLITY FARMS

Arthur Danks, Mgr. — Allamuchy, N. J.

Sugar Valley Shropshires

Are Not SURPASSED for QUALITY by Any FLOCK in AMERICA

I ALWAYS HAVE ON HAND choice flock headers, breeding ewes and choice show stock that cannot be surpassed in quality at the prices I ask. In my flock runs the Best Blood of the Best English Flocks. IF YOU ONCE BUY OF ME YOU WILL ALWAYS BUY. Come and see my flock; it will please you. My farm is easy to reach from Chicago. If you want first-class Shropshire Sheep write me before buying at extravagant prices.

I won Champion Ram, First on Pen of Ewe Lambs and First on Flock at the last International Show with stock of my own breeding.

L. KAMMERER, Proprietor, BRODHEAD, WIS.

A RARE OPPORTUNITY

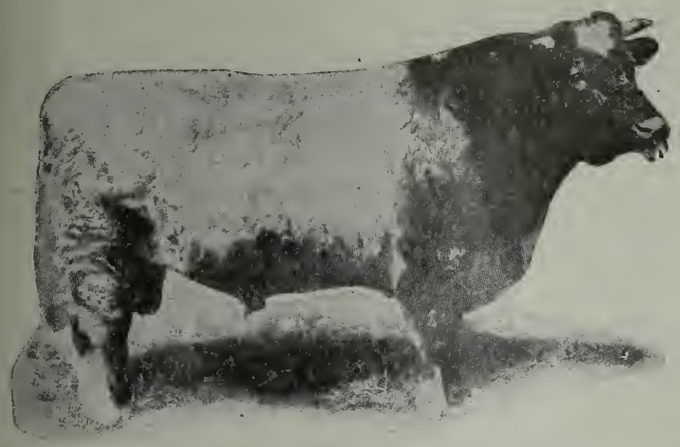
I will visit all Eastern Fairs this year for the purpose of buying pure-bred Live Stock for California breeders. I will also personally select specimens of the different breeds for the purpose of strengthening California Herds and Flocks at the Panama-Pacific Exposition. Correspondence invited. Address

W. M. CARRUTHERS, 721 HEARST BLDG., SAN FRANCISCO

Ravenswood Herd of Shorthorns

By W. M. Carruthers

The Ravenswood herd of Shorthorn cattle is one of the best known in the United States and the oldest in the Middle West. C. E. Leonard, the owner of this herd, has been an originator, not an imitator. The only hobby that he has ever had is that of breeding the best. Conservative in the highest degree and with a fixed purpose, he has been carried away by no passing fad or fancy, but has recognized worth wherever found, whether Bates, Booth or Cruickshank.



"Americus," the Highest-Priced Bull in the World.

Mr. Leonard's own words best describe his policy: "From young manhood and to the present day my best efforts have been for the improvement of the herd. Never a bigot, but ever skeptical to the extent of thorough investigation which has led me to believe that the best cattle can only be produced by a proper combination of the blood of the best breeders." The truth of his theories and the wisdom of the way is proven by the kind of cattle raised at Ravenswood. All red, they are no more alike in color than in conformation. Not only are they uniform, but they are uniformly good.

Mr. Leonard's first purchases were a bull and a heifer bought from George Renick of Ohio at a cost of $1,100 each. His next purchase consisted of the three cows, Imp. Charming Rose, Rosamond 8th, and Rosette at the New York Mills sale in 1871 at the cost of $4,000. From this foundation Mr. Leonard has built up one of the best Shorthorn herds in this or any other country. Many notable bulls have been used on the Ravenswood herd, but the crowning success was Lavendar Viscount, whose breeding combines the old Sittyton blood. While primarily a breeding bull, he yet has a show yard record unexcelled. He was shown at the American Royal at Kansas City in 1900, where he carried off the "Armour Trophy" for the best Shorthorn bull in the show. In December of the same year he was declared grand champion of the breed at the International Livestock Show at Chicago. He combines the substances and fleshing qualities of the North Country Scot with the style and finish of the Bates.

Mr. Leonard's last great achievement in the Shorthorn world was attained when he bred the cow, Merry Ravenswood III, the mother of Americus, the highest priced bull in the world to-day, whose picture is given herewith.

This little story of the Ravenswood herd would not be complete without saying something about its owner. The writer has had the privilege several times of spending the week-end with this wonderful breeder at his beautiful country home.

Mr. Leonard since his early manhood has guided and shaped the policy of one of the greatest breeding establishments in America. If there is one man who is and has been more prominently identified with the Shorthorn interests of America than another and who has stood more faithfully at the helm planning and directing for the welfare of the Shorthorn breed, Mr. Leonard is entitled to that credit. He was one of the organizers of the American Shorthorn Breeders' Association, now the strongest organization of the kind in the world. He gave liberally of his time and talent and helped to furnish the finances needed when the association was in its infancy and when the success of the present system of record and herd books was in the future. He was for many years a director and vice-president in the association and was successively elected president until he declined to serve longer. His honesty, judgment and conservatism have won for him a high place in many a council where questions of vital importance to the Shorthorn breed were to be determined. Personally, he is one of the most genial of gentlemen, fond of his friends, given to hospitality and to the entertainment of the stranger within his gates. The visitor to his magnificent estate, one of the most beautiful in America, is certain of a warm welcome, whether his mission be one of business or pleasure.

A word of praise would not at this time be out of place for Ed Patterson, Mr. Leonard's congenial manager, who has for thirty years assisted Mr. Leonard in making such a wonderful success of his Shorthorn herd.

Is there a young man in California who has the grit and energy to start a Shorthorn herd along the same lines as Mr. Leonard and make a success of it?

Exposition Livestock Notes

Word has just been received by D. O. Lively, chief of the Livestock Department, that at the annual meeting of the Guernsey Cattle Association, held in New York City this month, the executive board decided to give $4,000 for the maintaining of a view herd of Guernsey cattle from March 1 to December 1 at the Panama-Pacific Exposition. It was also intimated at their annual meeting that if $4,000 was not enough they would go as high as $10,000.

A few days ago D. O. Lively was informed by Kabrey Pasha that he expected to ship one hundred of the very best of Arabian horses from Turkey to be put on exhibition here during the Panama-Pacific Exposition.

Wheat makes good hog feed, fully equal, pound for pound to corn, but it should be either ground or soaked. The hogs cannot make good use of wheat fed dry.

ENORMOUS SAVING ON BUILDING MATERIAL

BUY NOW AT ROCK BOTTOM PRICES

Largest distributors on the Pacific Coast of Lumber, Plumbing Supplies, Sash and Doors, Hardware, Paints and Oil.

We have a complete Mail Order Department for your convenience.

Our prices and quality are beyond comparison. Take advantage of being able to see our entire stock at your own home by merely sending a request for our Catalog. A 4. Mailed free to any address.

—ALL GRADES OF LUMBER—

Our prices on Lumber are at all times below market. Our quality is always up to standard. Let us prove this to you. Get our quotations. We furnish estimates free. We carry all grades of Redwood, Oregon and Sugar Pine, Shingles, Shakes and Laths. Our Mill is equipped with all modern and up-to-date machinery to turn out the finest workmanship in Finish Lumber. Our prompt Delivery System is for your convenience. One trial with us will make you a continuous customer.

PRICES SMASHED ON PLUMBING!!

Finest grades low-down Closet Combinations. Solid Bent Oak Wood Tank. This is an exceedingly handsome bathroom fixture.

$14.00

Best Grade High-Tank Toilet Combinations. Special Value

$12.00

Six-Gallon Closet Tanks, finished in natural and Golden Oak

$5.25

$8.00

Finest Galvanized 24-gauge Steel Bath-Tubs. Cannot be duplicated at this price. Also porcelain bathtubs of every description at $14.50 up.

We guarantee all bathtubs sold by us to be exactly as represented. Our Guarantee Tag goes with every one. If you are not satisfied with your purchase simply return to us and receive refund of full purchase price.

$3.75

Finest Grade Porcelain Lavatories. Every conceivable design and pattern. Write our Service Department if you are undecided as to what you want in Lavatories. Our department will advise you; other grades from—$4.25 up.

One light single casement only 48c Made out of select California Sugar Pine. Our stock is complete in every detail. We guarantee all material and workmanship. Remember this price is a saving of at least 40%.

One Panel Mission Door, Worth $3, Only $1.50

Our enormous stock of Doors comprises everything imaginable in regulation and stock doors. We also are equipped to make any design to order. The quality will please you. The money you save in buying doors from us is an important item. We will be pleased to furnish estimates and special design free of charge.

Sherwin & Williams and Lowe Bros.' Paints. The kind you buy at $2.25 gal. Our price. $1.40

Worden & Meeker's Bankrupt Stock Paints. Regular price $2.00. Our price $1.25

Shingle Stains, all colors..... 50c

Graphite Roofing Paint, worth $1.10 per gal 50c

Corrugated Iron, per hundred sq. ft..... $3.75

Utility Wall Board. No. 2 grade, per sq. ft..... 2c

Ready Roofing Paper, including nails and cement sufficeint for laying, per roll $1.40

Galvanized Poultry Wire, 2-inch mesh, in rolls, per sq. ft..... 1/2c

Gas Ranges, 100 different styles ..... $4.75 up

Also everything in Fittings, Supplies, Pipe, Vitrified Sewer Pipe, Basin Supplies, Bathroom Trimmings, Laundry Trays, in fact, everything in this line.

FREE Don't fail to clip out coupon opposite, and receive our 1914 Catalog A 4 absolutely free. You will find it both convenient and economical to refer to when in the market for Building material, Plumbing Supplies, etc. It also tells you how our Service Department will help you in figuring out your plans and making your selections. It fully explains our Guarantee Money-Back Tag that goes with every article purchased from us. This is your absolute protection and compels us to satisfy you in every respect or refund your money. Write us for our catalog today. It will save you money.

Whiting-Mead Commercial Co., 415 East Ninth Street, Los Angeles, California. O.&F.

Please send, FREE, your 1914 Catalog.

Name .....

City .....State .....

WHITING-MEAD COMMERCIAL CO.

9th Street & Maple Ave. Los Angeles, Cal.

Cow vs. Soda Water

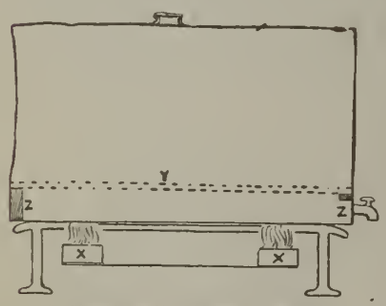
A few days ago a kindergarten class composed of some 18 or 20 children, from one of the East End schools, was taken on a visit to a small dairy farm for the purpose of instructing the little folk in the mysteries of butter making.

The tots were greatly interested in all they saw, but the operation of milking the cows seemed to attract more attention than anything else. Finally one bright little hopeful, after watching the foaming milk gradually filling the pail, turned to the teacher and asked:

"Teacher, do they get a different flavor from each spigot?"

Helps in Keeping Cream Sweet

Only good, sweet cream will make the kind of butter that will sell for the highest price and bring the proper returns to the dairyman. It is true that sour cream will be quite satisfactory if it is a clean sour and not too strong. Still sweet cream is much preferable under any conditions and



A Simple Milk House Sterilizer.

certainly every effort should be made to prevent cream from souring.

In our May issue a cream cooler used in a number of San Joaquin valley dairies at the suggestion of Inspector Starkweather of the State Dairy Bureau was described. A sterilizer that he suggests is shown here. This is simply a large boiler placed upon a two-burner oil heater, or any other kind of a heater for that matter. For best results it should contain about 10 gallons of water, though its effectiveness as a sterilizer is just as good when it is smaller. It can contain as much more as is desired. The idea of the thing is to have it heat the water for cleaning and after the washing is over to provide a place where the milk utensils can be placed and sterilized.

For sterilization it is best to have only enough water in the bottom of the boiler to provide steam and to keep the boiler from burning. A faucet is put in one side about an inch or an inch and a half up. The water for washing utensils is drawn from this faucet until only about an inch of water is left.

An inch or so above the surface of this water are soldered metal blocks in each corner, and also in the middle of the boiler, if required for strength, to hold up a removable shelf of perforated iron. The various utensils used in the milk house are then put on this shelf, bottom up, and the water boiled. The steam covers them entirely, inside and out, killing all bacteria and absolutely sterilizing everything there. It is better even than a steam jet. Ordinary rinsing in hot water is not enough ordinarily, as there will often be a little cream or milk left, which may begin later to spoil, but this kind of sterilization purifies everything and helps immensely in turning out fine cream. The burners are labeled "X," the shelf "Y" and the blocks on which the shelf rests "Z." The shelf is placed in the boiler only after washing is over and steaming is to begin.

The apparatus is very economical and easy to operate. The milker can light up the burners when he starts milking, or when he is half way through, depending on how long it takes to heat the water, then he can keep on his regular work and when he is ready to clean up the water is ready. The milk utensils should be kept in the steam for about 10 minutes.

An adaptation of this principle was used on Mr. Starkweather's suggestion by a dairyman on the Merced river, who had a kettle stove. He put in the shelf, which was held up above the surface of the water by the curve in the bottom of the kettle. Later on this dairyman started figuring on how he could serilize his milk cans and had the plumber make a special cover. This cover was about the size of the kettle itself, the top standing up so high that it gave plenty room in the kettle for several milk cans. It was used only while the cans were sterilizing, not for ordinary water heating.

When utensils steam-heated like this are removed from the sterilizer, they are practically dry and as they cool off they dry absolutely. The owner of the kettle stove said that his extra equipment cost him only $2.75 and that it was worth $50 to him in producing better cream.

Useful Hose Connection.

Another very useful arrangement for the milk room which is used on a California dairy is told of in a recent issue of Hoard's Dairyman. By it cold water and hot water are secured from the same hose, as desired.

The cold water pipe and the steam pipe are brought together in one corner of the room. They are joined to a third pipe on which is fastened the hose for washing the room. A valve on the steam pipe makes it possible to shut off the steam when the cold water is beng used, and one on the cold water pipe makes it possible to use steam without mixing in the water.

In washing the room, the cold water is turned on first. This washes away any mud on the floor, the milk that is adhering to the bottling machine and to the aerator. Then the steam is turned on and running into the cold water makes it hot. This further cleanses the floor and the utensils. Then the cold water is shut off and the steam allowed to run. This sterilizes the utensils, and the work of cleaning is finished.

The convenience of this arrangement makes it a pleasure to do the cleaning, and it is no trouble at all to get the help to keep the place in a strictly sanitary condition. The entire job is finished in about five minutes.

Silage for Hogs

The question has come up a number of times as to the value of silage for hogs. In theory the possibilities were doubtful owing to the bulkiness of silage and the desire of the hog for concentrated food. That silage has a high value as hog food, however, is shown by the following letter regarding silage (evidently corn silage) written by a Poland China breeder in the East to the "American Swineherd."

"We have had such good luck feeding ensilage to our brood sows this winter that we felt it would be only right to give our plan and success to the readers of the 'Swineherd.'

"We do not claim for it the feeding quality of alfalfa, but we do claim that it makes a good filler or roughage for sows.

"We feed it once a day; first we take oats and scatter it in a line; then we take two bushels of ensilage, scattering it over the oats. This is the morning feed for twenty sows and you can rest assured that they are crazy for it. They will stay out and pick at it until they get everything but the dry leaves.

"This also gives them lots of exercise, which they need, and their manure is soft and of the color we like to see."

It can be seen from the above that the main value of corn silage for hogs is in giving a succulent roughage to the ration, and that the hogs enjoy it greatly. In California alfalfa pasture makes a wonderful feed for hogs and alfalfa silage makes just as good a feed as green alfalfa and is one of the cheapest feeds on earth. Quite evidently the silo can well prove a boon to the hog raiser, both the purebred man who gives special care and feeding to his animals, and to the man who raises hogs for the market.

Interest in Draft Horses

One of the encouraging features of the agricultural outlook in California is the greater interest that is being taken in draft horses.

A number of breeders in the State have been importing considerable consignments of Percheron and other draft breeds during the season and these have met with ready sale. As California turns more to the cultivation of the soil and to the livestock industry, the big drafters will be in greater demand, as on them depends so much in the way of the motive power of the farm.

Exercise is of prime importance in several ways. It keeps the pigs nimble and in a healthy condition.

Ask Your Dealer for
EL DORADO COCOANUT OIL CAKE
for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market to-day. If your dealer doesn't carry it, address
EL DORADO OIL WORKS
149 California St. San Francisco

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT, with List of Inventions Wanted and Prizes offered for inventions, sent free. PATENTS ADVERTISED. **FREE**
WANTED—NEW IDEAS
Send for our list of Patent Buyers.
VICTOR J. EVANS & CO., Washington, D. C.

Star Goods Sold by Reliable Dealers Everywhere

Make Barn Work Pay Profits!

DON'T spend *wages over* and *over* again for work that Star Barn Equipment will do for a *lifetime* on a *single investment.* The *saving* in wages, work, and time wasted, pays the cost of installation the *first year!* After that you get *free* all the advantages of a cleaner, more sanitary, better kept barn. Let us prove our claims by mailing you our big, handsome catalog. No expense, no obligation.

STAR Stalls and Stanchions Litter—Feed Carriers

The most comfortable, durable, and in the end the most economical Stalls and Stanchions made.

Built in Units. Get one or a dozen as you need them. Let your *Equipment* grow with your *herd.*

The Alignment device keeps cows lined up at the gutter, keeps them clean and comfortable—makes it easier for you and for the help.

Giant Star Stanchions have labor-saving, one-hand lock that stays locked—Patented Lock Guide—Sure-Stop—Instant and easy adjustability to all neck widths — smooth wood lining firmly held in a "U bar;" these are a mere few appealing Star features that should make you insist on Giant Star Stanchions.

The speediest, easiest raising and lowering and most *trouble-proof* carriers on the market. *Roller Bearing throughout.*

Tremendously popular because of patented exclusive labor saving features. No matter how your Stalls and Gutters are arranged, there's a Star Litter Carrier just the thing for you. Our new patented Curves and Switches make Star Litter Carriers practical everywhere.

Six different styles and types. Made for Rod and Rigid Track.

The Star Swinging Boom does away with posts and supports in the barnyard.

Learn all. Star Goods pay cost the first year. Let us prove it.

Mail Coupon Today

Hunt, Helm, Ferris & Co.
44 Hunt St., Harvard, Ill.
Please send me complete information about Star Barn Equipment.
Name.....
Address.....
State.....

FREE Blue Print Plans

Get our big Instructive Catalog—sure! When you send coupon—if you are remodeling or building a barn—sketch out a rough floor plan and send it along. We'll send you a specially made blue print that will be a big help. No obligation incurred. We're helping Farmers everywhere. Let us help you. Send Coupon today.

HUNT, HELM, FERRIS & CO.
44 Hunt St., Harvard, Ill.

PACIFIC COAST DISTRIBUTORS:
PACIFIC DAIRY MACHINERY CO.----------San Francisco, Cal
MONROE & CRISELL----------Portland, Oregon
DAIRY MACHINERY CO.----------Seattle, Wash

If Your Dealer Can't Quote Prices Write Us Direct

Save Money By Feeding Cocoanut Oil Cake Meal

A Natural Product that Contains 16.4% Protein, all Digestible

Brings quick results,
Makes hens lay more eggs,
Increases butter fat in milk,
Makes hogs fat with clean flesh.

Free Sample and a copy of our booklet containing valuable information on the subject of "Successful Feeding" sent gladly on request. Write to-day.

Address Department C
PACIFIC OIL & LEAD WORKS
Manufacturers
155 Townsend St., San Francisco, Cal.

New Zealand's Plans for the Exposition

By W. M. Carruthers

New Zealand is one of the most beautiful countries in the world, and as livestock breeders its citizens are ranked among the best. The population is comprised mainly of Scotch-Americans and Scandinavians.

The government is responsible for the wonderful standing attained by this country along the livestock line. When the early pioneers started in the livestock business the government loaned them money with which to purchase their flocks and herds, and even went so far as to help the young men who went to New Zealand to purchase their land, in order to give them a good start. If the men so assisted proved good farmers, they were then loaned more money with which to purchase their first flock or herd. The products from these flocks or herds, mainly wool and mutton, were handled by the government and sold at the highest possible prices on the British market. The money thus earned was turned over to the young producers to purchase more stock, and to pay off their debts to the government. This is the method by which New Zealand has assisted her stockmen in attaining their enviable position as livestock breeders.

New Zealand Bred Romney Marsh Sheep, Owned in Oregon.

The rivers of this beautiful country which at one time contained no fish whatever are now filled with salmon; the moors and marshes abound with wild game, and the laws are such that only a certain amount of fish and game can be killed each year. There are many other beautiful features which we could mention, but space will not permit at this time. [The fish in New Zealand streams, it might be mentioned, came from California, which is an interesting story—Editor.]

At the Panama-Pacific Exposition the stockmen from New Zealand will be represented by three distinct breeds of sheep, namely, the Corridales, the Romney Marsh and the Lincoln, showing what years of experience and good management can do in the way of breeding sheep.

The Corridales are a New Zealand breed, having for a foundation the Rambouillet, and being bred along lines which make them the Merino of New Zealand. Sheep which have made good in the mountain countries and their cross-bred lambs have no superior as mutton sheep. They are large, heavy-wooled and are very much of a dual purpose breed, as the New Zealand breeders deem the mutton end of the sheep worthy of their consideration.

The Romney Marsh sheep, which are recognized all over the world as one of the hardiest mutton breeds in existence, are another New Zealand breed. These sheep have been bred along almost the same lines as the Dorsets, but are a little larger in size, hardier, and are also a little better wooled. Their lambs are not as early as the Dorsets, nor are the ewes as good milkers, but crossed with the Corridale their mutton is "Prime Scot" on the London market.

The New Zealand sheepmen have improved the Lincoln more than any other breed on their island, and the American and English Lincoln has been left away in the rear by the wonderful development of this breed in New Zealand. His size, quality and texture of wool make him the wonder of sheepdom, and although his fleshing qualities may be no better than the English Lincoln, he far surpasses his English brother when it comes to wool.

The three breeds of sheep mentioned above will be shown at the Panama-Pacific International Exposition in 1915, and they represent the brains and energy of some of the most skilled flockmasters of the world. It will more than pay the sheepmen of this country to make the trip across the continent to see and examine these marvelous breeds of sheep. No doubt much good will come from the importation of these sheep and it is expected that they will all be purchased by the sheepmen in the United States.

Hog Breeders Will Meet

The California Swine Breeders' Association, whose motto is, "More and Better Hogs," is to hold its regular annual meeting June 2, 10:30 a. m. at the University Farm at Davis. The Fruit Growers' Convention of a full week will be in session at this time and form a double incentive for attendance. The membership of the Swine Breeders' Association has more than doubled since its organization a year ago and the association is in a vigorous condition. The membership is open to any one interested in swine production, dues being only $1 per year. No fixed programme has been arranged, but there are a number of important matters to come up before the meeting, one of the most important being how to make the exhibit of hogs at the Panama-Pacific International of the greatest possible value to California.

Turpentine in milk at the rate of a teaspoonful of the medicine to each 100 pounds of hog is said to be one of the simplest as well as most effective methods of getting rid of intestinal worms in swine. Best results are secured if the treatment is repeated three or four days in succession.

The practical remedy for little pigs that are liable to be troubled with thumps is to provide them plenty of exercise and large range.

GAS ENGINE CYLINDER OIL

TRADE MARK REGISTERED 1873

VALVOLINE

FOR

TRACTORS AND CATERPILLARS

FORTY YEARS' EXPERIENCE AS REFINERS.

VALVOLINE OIL COMPANY

San Francisco. Los Angeles. Portland. Seattle.

We have made Farm Machinery 31 years

Way back in 1883, the Holt Bros. started to manufacture farm wagons and wheels. From the very first, they determined to stake their reputation on the quality of their output. With such a policy they could not fail. The business grew and prospered, and gradually one line after another was added. The Company now sells

CATERPILLAR

Reg. U.S. Pat. Off.

Harvesters — Scrapers
Freight Wagons — Lubricants
Plows & Harrows — Farm Supplies

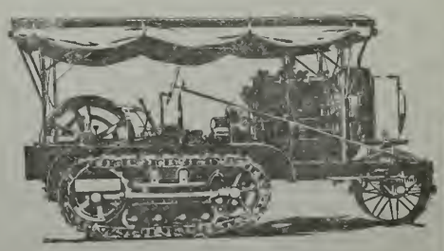
Throughout these 31 years the same policy of "quality first" has been maintained, and today, as always, the name "Holt" stands for reliability in farm machinery whether it is stamped on harrow or harvester. It is the result of the Holt policy, plus high grade materials, first-class workmanship and rigid inspection.

The leading Holt product is the Caterpillar Tractor. On the Pacific Coast there are three Caterpillars to every other tractor in use.

The Caterpillar is made in three sizes. Send for Caterpillar catalog F 54, or for literature covering the entire Holt line.

THE HOLT MANUFACTURING COMPANY, Inc.

Stockton, Cal.
Los Angeles, Cal.
Portland, Ore.
San Francisco, Cal.
Spokane, Wash.
Peoria, Ill.
New York, N. Y.



Sale of Army and Navy Goods

DIRECT FROM U. S. WAR DEPT.

Blankets from $2.00 to $5.00; Navy Blue Shirts, $1.75; Olive Drab Army Shirts, $2.50; Khaki Army Shirts, $1.00; Army Wool Socks, 25c pair; U. S. Knapsacks, 75c; U. S. Canteens, 40c; U. S. Rifles, $2.50; Mess Kits, 35c; Shelter Tents, $1.25. Other U. S. Army Goods to interest and please everybody.

Send for Free Catalogue. Mail Orders Promptly Filled.

SPIRO HARNESS CO., 307 Market St., San Francisco, Cal.

Draft Horse Breeders Organize

On the 16th of May the California Draft Horse Breeders' Association was organized at the University Farm of Davis. Prof. Gordon H. True, head of the Animal Husbandry Department at the farm, occupied the chair. In a few well-chosen remarks Prof. True stated why this organization should be formed. He believed at this time that the breeders of draft horses were rather discouraged and the outlook appeared not to be as bright as in former years. He also stated there were many reasons for this among which was the fact that the auto truck had been supplanting the horse in a great many instances.

Henry Wheatley of Napa made a few remarks, among which he stated that the State Fair premiums should be more for farmers' horses than for importers, as something should be done to encourage the farmers to breed better horses. He also stated that the stallion law should be enforced and amended in several particulars.

James McNab of the McNab & Smith draying firm of San Francisco, read a well prepared paper. In it he stated that their firm was importing several cars of heavy draft horses for work on the streets of San Francisco every year from the East. None of these horses were under 1,800 pounds in weight when they were in ordinary flesh. He also stated that when he was in Europe several years ago he saw draft horses in Great Britain and Belgium working on the street that weighed over 2,400 pounds each. McNab & Smith's experience has been that draft horses are much better for their work than auto trucks.

A. W. Foster, one of the regents of the University, made an eloquent plea for the farmers and stock men of the State to stay with the State Farm and assist it in the great work which it is trying to perform for them along livestock lines. He stated his experience in the production of draft horses had been that it was difficult with ordinary methods to put sufficient weight on horses. He believed the day had gone when a draft colt could be raised on grass alone, and to accomplish the weight required in a draft horse at maturity, he must be handled the same way as a Shorthorn bull, fed grain for the first two years of his life.

I. D. Graham, Assistant Chief of the Livestock Department of the Panama-Pacific Exposition, made a fine address, encouraging the livestock men. He quoted figures in which he stated that all the different agricultural products of the State aside from livestock, realized last year, $114,000,000. Livestock realized $140,000,000. He also spoke of the work being done by the Panama-Pacific Exposition in his department and stated that the premiums would be higher on draft horses than any other phase of the livestock department, also that the draft horse associations would almost duplicate the Panama-Pacific premiums.

Several others made short addresses, after which the association was formed. Henry Wheatley of Napa was elected president, Wm. Bond of Newark, vice president, and Prof J. I. Thompson of the University Farm, secretary and treasurer. The board of directors appointed by the president were: Prof. Gordon H. True of the University Farm, Ira Barker Dalzell, San Francisco, and J. E. Westgate, Rio Vista. This should make a fine board of officers and if the same enthusiasm be kept up which was displayed at the meeting on the 16th of May last a better and more prosperous outlook is in store for the draft horse.—W. M. CARRUTHERS.

Cure for Hog Mange.

About the only skin disease that one is liable to have occasion to treat in the hog is mange. This is caused by a parasite that burrows under the scurf skin and causes great irritation, practically destroying that part of the skin, so that a little scab forms. This, on account of great itching, causes the animal to rub and this disease soon becomes general throughout the herd. The scabs so formed are rubbed and soon become a raw sore. The first appearance will be found on the thin parts of the skin, back of the ears, inside the thighs or upon the back. The parasite may be readily seen with a pocket magnifying glass.

When first discovered remove all unaffected pigs to buildings or grounds where affected pigs have not been. The best treatment of this disease is to first wash the pig all over with soapsuds and then rub in dry sulphur. The sulphur coming in contact with the sores forms a compound that is poisonous to the parasite.

Another sure remedy is to steep two ounces of stavesacre seeds in one and one-half quarts of water. Keep water nearly boiling for an hour, then add enough water to make up the quantity originally placed in the vessel. This solution rubbed well into the skin will kill both the parasite and its eggs. This may be repeated if necessary. Animals that are occasionally dipped with any of the coal tar preparations will never have mange. Prevention is better than cure and this is one reason why pigs should be dipped or thoroughly wet with some of the many dips as a preventive to skin trouble.—W. M. C.

Farming is becoming a more systematized business. This is one thing that has removed the drudgery from the work.

Dehorning Young Bulls

The practice of dehorning heifer calves with caustic potash is becoming more popular all the time and the big majority of dairymen are feeling that the dairy cow has no right to carry round a pair of horns. Perhaps the bulls will continue to wear horns, owing to a suspicion that a dehorned bull is not as virile a one as nature made him, though it seems to be quite firmly believed among many breeders that the horns do no good and that no bull ought to be allowed to wear them.

However, the practice when hornless bulls are desired, is different than with heifers, according to the opinion of one pure bred dairyman of the San Joaquin valley who wants no horns on the bulls he keeps. He uses the potash on the horns of his heifer calves, but permits those of the bulls to grow normally until the time when they begin to develop the bull temperament pretty strongly, at which time he uses a dehorner. This makes the bulls less combative and easier controlled.

If the potash is successfully used, the bull temperament develops as usual and nothing can be done to quiet his disposition, he will be as dangerous as he otherwise would be except for the slightly lessened ability to do damage; while the bull whose horns developed, but were removed, will be like the other in not having horns to do damage, and in addition by their removal will be made of a more peaceful disposition. In brief, if a bull calf is not going to be permitted to wear horns when he grows up, he will have a better disposition if the horns are let to grow and then removed than if they are never allowed to start.

Concrete floors in the barn help a great deal in saving manure.

Cattle Markets Need Change.

Civilization works westward, so it seems to be with stockyards. Chicago pioneered the way, then came Omaha, Kansas City and St. Louis; next Denver, followed by Portland, Oregon. Now we hear that El Paso, Texas, the center of the great range country of the Southwest, is becoming dissatisfied with the old conditions of marketing and the Clay, Robinson livestock commission house has just opened a house there. The words of John Clay, president of the largest livestock commission house in the world, show conditions somewhat similar to those in San Francisco bay cattle markets and suggest the need of better things.

"In the realm of cattle dealing, El Paso is yet in its infancy. We must have a central stockyard. Just now there are four units all fighting for business and doing it at great expense to themselves, the shipper and the dealer. There is a great howl in this country against concentration, but it is the only way to do business. The steam engine, the telegraph, the telephone, and the automobile are changing business, and, like money and water, business seeks the lines of least resistance. Politics and religion have little influence on business except as disturbing factors. Business left to itself follows economic lines. It may deviate, but sooner or later it will flounder, get mired down and those who have followed the wrong course will fail. The separate stockyards at El Paso may be at war, but the quicker a central trading place is established the better not only for the railroads, but for the city, the shippers, the dealers, and the buyers. In the wake of central stockyards will come a packing house, nay two or three of them. The rich fields of alfalfa will co-operate with the plains and bring wealth in their trail. Conditions are calling for central yards."

Always So.

A Kansas farmer, a Dane, applied for naturalization papers. The judge asked him:

"Are you satisfied with the general conditions of the country?"

"Yas," drawled the Dane.

"Does the Government suit you?" queried the judge.

"Yas, yas; only I would like to see more rain," replied the farmer.

Agricultural waste is not confined to the farm. The United States department of agriculture announces that the making of coke in the beehive type of oven causes an annual waste of over twenty million dollars in ammonia, products of which would make valuable fertilizer.

For Quickness and Economy in Drying Fruit

Read This Letter From a Satisfied Customer:

"To one who has tried and knows, it is superfluous to state that the 8-lb. steel tie track I bought from you last season has given satisfaction. One man can push a car loaded with fruit where two were required when my old wood and strap-iron track were in use. Building with a monkey wrench, **durability, ease of operation and low cost of upkeep** all tend to make one forget the initial cost, after a season's use. My present wants are supplied. You certainly merit the patronage of the fruit growers."

LET US GIVE YOU THE NAME OF "A SATISFIED CUSTOMER" in your own neighborhood.

SEND FOR OUR NEW BOOKLET.

It tells the modern, economical way of handling fruit.

ORENSTEIN-ARTHUR KOPPEL CO.
223 RIALTO BUILDING
SAN FRANCISCO CAL.

Wedding Invitations and Announcements
Engraved stationery for all occasions. High class letterhead and pamphlet printing and designing. Write for samples and prices.
FRED W. KNIGHT & CO.
Opposite the Palace Hotel, San Francisco.

WANTED

Names and addresses of farmers who can or want to ship, eggs, butter, poultry, fruit, etc., by Parcel Post, direct from farm to consumers living in San Francisco and Bay Cities. Write, stating what you have to sell and giving full address,

Box 654

Care Orchard and Farm, San Francisco.

The Dairy Opportunities of China

California's location on the shores of the Pacific give the opportunity to provide Eastern Asia, to say nothing of Western Latin America, with fine purebred stock. Many fine purebred dairy bulls and cows are going out at present, nearly all from the East because California has not the stock, and when dairying gets on its feet in the Orient, the demand will be far greater.

To give an idea of the dairy situation as it exists in China to-day and the methods that can be used in its development we quote from a private letter from a missionary in North China, Horace Houlding, of Tai Ming Tu, also from a circular issued from his mission for circulation in China. He states:

"We are in a land of cows that do not give milk. They are kept for one purpose, that they may till the soil and haul the carts and then when too old for anything else, they are recognized as "dual purpose" sufficiently to be made into beef. They resent as a personal indignity any handling of their udder, and when missionaries have tried to train these native cows into giving milk it has been only by retaining the calf to start operations that any lacteal fluid can be obtained—unbeknownst to the cow, as it were, and then at most a cup or so.

"Six years ago next fall we brought out a little herd. We knew nothing about the matter then, but our stock in trade was the very fact we knew we knew nothing and we began to learn. As these heifers made good, friends in America became interested and some really valuable breeding stock has been donated us until we have a good start in purebred Holsteins. A legacy conditioned on being invested in something income producing amounting to about $1,200 started us, and since then it has paid its way till now we have over 40 head of stock, including nine half bred heifers housed in good barns, a calf house, a brick silo 13 by 35 feet, to which we are to add 15 feet in height this spring, ice house and creamery building of four rooms, including milk room, well room, laboratory and packing rooms.

"We are shipping butter by parcel post to nearly all the central and northern provinces of China and have already sent out a good many young cattle for foundation stock in different missions and schools and hospitals. (A circular shows that butter is sold for 75 cents to $1 per pound, so there should be an opportunity for California butter across the Pacific.) China needs the dairy cow and we have at least proved large possibilities here. Alfalfa does well, corn also, and where corn and alfalfa do well what is there to hinder the dairy cow?"

The value of pure bred dairy animals, also the methods of using them to best advantage, are shown as follows in a circular issued for use in China for persons who want to secure milch cows:

"The most practicable way to most to obtain milk will be by half breed cows; pure blood foreign cows cost not less than about gold $200 by the time they are landed in one of our interior stations. The practicable way to have good half breed cows is to have a purebred foreign bull, then your second generation of calves will be ¾ and the next ⅞ foreign blood, while with a full blood foreign cow bred to a native, your second generation is only ¼ and the next only ⅛, or practically nil for milk value.

"A half bred bull is not worth bothering with; with native cows you cannot get above ¼ milch blood." (It is next advised to buy only well bred bulls of the best pedigree for milking purposes.)

"It is not hard to own and have a bull cared for. To illustrate: Our purebred Ayrshire leader represents a value of over $400 gold, nevertheless he is used as an ordinary farm ox and it will add years of usefulness by being so worked.

"Get a pure foreign bred male calf —out of a first-class milker—place him with some trusty, nearby farmer who will use him for his keep and raise your own heifers from native cows. We are getting farmers to raise us calves from their native cows bred to our herd leader—paying a stipulated price, if a heifer—if not a heifer, the half bred calf is of no practical use so far as dairying is concerned."

The development in China along dairying lines has been very active during the last few years. Sometime ago the Chinese Minister of Agriculture appointed O. M. Plummer of the Union Stock Yards at Portland to be their representative in this country and supervise all shipments of livestock to China, and since this appointment large shipments of pure bred stock have found their way across the Pacific for China, and each year seems to bring more and better orders for livestock to develop the industry in that country. The State Veterinarian of California was commissioned by a rich Chinese merchant about a year ago, to ship him some high class Holsteins, and many other orders of this kind have been passing through the Golden Gate en route for different Chinese ports.

Just recently the livestock department of the Panama-Pacific Exposition was consulted in regard to purchasing one hundred registered Holstein cows to be shipped to China. The letter which contained this request stated that the party requiring the Holsteins recently purchased a hundred head of this breed in Australia and had them shipped to his country.

The question has often been asked, "Will the day ever come when dairying on the Pacific Coast shall have been carried to such an extent that it is no longer profitable?" There are still many sections of the Pacific Coast where new herds are needed for dairy development, but if the day should ever come when the people of the Pacific Coast are no longer able to handle the dairy cows produced here, there will be a large and ever-increasing demand for them in the foreign fields, such as China and the other countries of Eastern Asia, for many, many years.

Cheap Checking With Tractors.

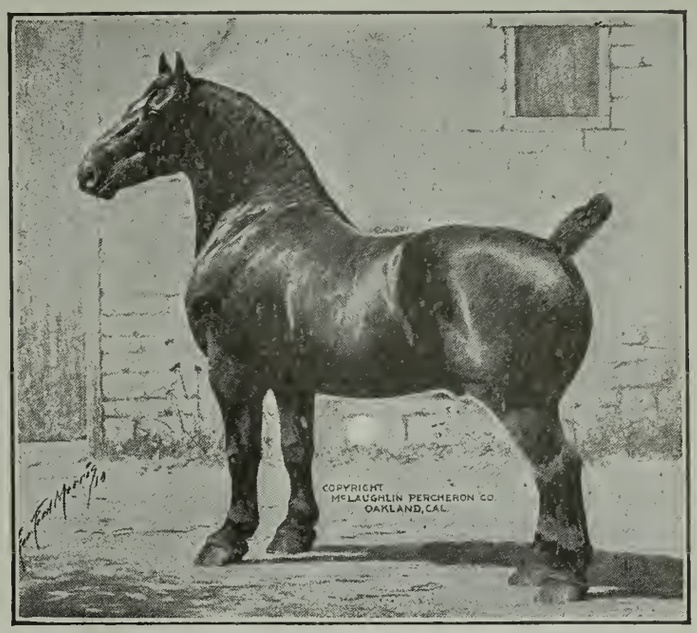
Some very cheap checking was recently done by I. L. Green of Gridley, Butte county, in preparing some land for rice with two Ball Tread tractors. As is usual in rice production, it was necessary to levee the land he was to plant to rice in order to irrigate it properly. There were 20 miles of contour levees to construct on the 300 acres he was working and the best bid he could get for putting up a small levee was 1 cent per running foot, or something over $200 for the job.

He decided that he could do the work better himself with the tractors and built a big "A" shaped apparatus, with an opening on the small end. This was drawn along over the plowed ground, crowding the soil together and leaving a nice, uniform levee in its wake. Each tractor took an end.

The levee that was thus built was two feet high, four feet wide on the base and a foot wide on the top. It was built in a single day, the total cost being $40, as against the $200 and over which would have been necessary with scrapers for a levee not as large or effective.

Regularity of feeding and work makes long-lived horses.

America's Leading Horse Importers
PERCHERONS



One of Our Recent Importations. Distinctly the "McLaughlin Type."

At the great INTERNATIONAL LIVESTOCK EXPOSITION, Chicago, Dec., 1913, our stallions won Two Gold Medals; Two Championship Ribbons and other honors. At the California State Fair, 1913, we won every FIRST PRIZE in every class competed for, including every CHAMPIONSHIP.

When you want the BEST, let us hear from you.

Western Stables, 47th and San Pablo Ave., Oakland, California.

McLAUGHLIN PERCHERON COMPANY

THE FARMERS' MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Chicks of Thoroughbred S. C. White Leghorns, 200-egg strain. Not simply chicks, but stock that lays and pays; price $8.50 per 100 for May and June. I hatch only from my own yards, 1,400 breeding hens. Send for folder. **Buena Vista Poultry Yards, F. F. Dobbel, Box 33, Sonoma, Cal.**

For sale—White Leghorn Baby Chicks; 1,500 for shipment May 22, 1,500 for shipment May 26, 1,500 for shipment May 29, in lots to suit; price $7.30 per 100; high grade utility stock. **Must Hatch Incubator Company, Petaluma, Cal.**

Turkeys, Bourbon Red, White Holland, Mammoth Black; eggs $5.00 per doz.; baby turkeys—Holland 50c each, Bourbons and Blacks 60c each, hen hatched. **Mrs. B. Hocking, Guasti, Cal** Winner of first prizes and specials.

PETALUMA HATCHERY—Now booking orders for spring. Send for circular. Can ship chicks to points reached in three days. When ordering why not get the best? **L. W. Clark, Petaluma, Cal.**

Incubator Chicks and hatching eggs—White Rock, Black Minorca, White, Brown and Buff Leghorns, Rhode Island Reds. All high-class stock. Send for booklet of prices. **Mahajo Farm, P. O. Box 597, Sacramento, Cal.**

Houdan, Buff Orpington, Plymouth Rock hatching eggs, $1.50 per fifteen. Chicks $3.00 per dozen, now ready. Indian Runner eggs 85c per twelve. **C. L. McGee, 1635 Julia St., So. Berkeley, Cal.**

Miles Anconas—Special sale of stock at low prices. We must sell 50 of our breeders to make room for growing stock. Write to-day and get first choice. **L. Miles, 511 West Seventeenth St., Santa Ana, Calif.**

Selected Eggs for hatching from Toulouse geese and M. B. turkeys, 21 cents each; pearl guinea and runner duck eggs, 8 cents each; also Belgian hares. **J. Wellhorn, Warren, Oregon.**

Ancona Eggs by insured parcel post from my pure bred persistent laying strain of mottled Anconas, $1.50 per 15 postpaid. **E. T. W. Barnes, Sisson, Cal.**

Croley's Growing Chick Feed makes strong and healthy pullets. Write us for free daily egg record book. **Geo. H. Croley Co., Inc., 631-637 Brannan st., San Francisco.**

Order Mammoth Bronze Turkey eggs from largest turkey ranch in Stanislaus county, $3 per setting. Address **Crow's Landing Turkey Ranch, Box 227, Crow's Landing.**

Buy your 1915 Breeding Cockerels and Drakes now and save money; White Leghorns, Black Minorcas and Runner ducks. **Broadview Poultry Farm, Puyallup, Wash. Dept. F.**

Petaluma Hatchery—Leading varieties. Send for circular. Can ship chicks to points reached in three days. When ordering why not get the best? **L. W. Clark, Petaluma, Cal.**

Baby Chicks—Orders taken now for S. C. White Leghorn chicks from vigorous free range hens. Price $7 per hundred. **H. P. Hansen, R. 4, Box 177, Petaluma, Cal.**

White Minorca Eggs for hatching; hens for sale; reasonable price. **T. H. Bowen, Route 2, Santa Ana, Cal.**

If You Want Eggs, get Andalusians. **Daniel Calbreath, Monmouth, Oregon.**

Rhode Island Reds Exclusively—Eggs $6 per 100; day-old chicks $15 per 100. Cash with orders, or stamp for reply. **L. W. Nellsen, R. 2, box 1, Petaluma, Cal.**

Trap-Nested S. C. White Leghorns—Cockerels, breeders, eggs and chicks. **Arthur R. Schroeder, Box 22, San Gregorio, Cal.**

Albert M. Hart, Clements, Cal. (successor to Ed. Hart), Mammoth bronze turkeys and eggs for sale. (Circulars.)

A Fortune in Eggs—New Method Egg Preserver. Particulars for free recipe, write **Golden Remedies Mfg. Co., Sonoma, Cal.**

Indian Runner Ducks. Ducklings from prize stock, and eggs for hatching, reasonable. **Mrs. Nutman, 295 Page St., San Jose.**

Incubators, Brooders, Supplies, Smith's Universal Chick Feed. Hogan's "Call of Hen," $2, prepaid. **F. F. Smith & Co., 1006 J St., Sacramento. Circulars.**

Barred Plymouth Rocks—"The kind that win and lay." Eggs for hatching and stock for sale. **Chas. H. Vodden, Box 693, Los Gatos, Cal.**

RESULTS

4 to 1 in Favor of Advertising in Orchard and Farm

The extract from letter from a prominent California advertiser should be of interest both to readers and advertisers:

Stockton, Cal.

Orchard and Farm,
San Francisco.
Gentlemen:

I am inclosing an advertisement for about a third of a page, together with wash photograph, V. T. 22.

The results of our advertising up to this time show very largely in favor of your medium for space used. As a matter of fact, we have received from your ad four inquiries to one as compared with another leading agricultural paper, the space and advertisement itself being practically the same. . . . . .

Very truly,
SAMSON IRON WORKS.

POULTRY—Continued.

French Houdan eggs, $1.50 per 13; chicks 25c each; choice stock. **Mrs. B. Hocking, Guasti, Cal.**

Poultry Shipping Coops—Standard sizes, lowest prices. **Selbel Mfg. Co., 314 Sixth st. Petaluma, Cal.**

Ring-Necked China Pheasants for Sale—Also eggs in season. Address **T. D. Morris, Agua Caliente, Sonoma Co., Cal.**

The Buff Orpingtons You Want—Eggs for hatching; breeding birds for sale. **Ernest L. Wilder, Los Gatos, Cal.**

RABBITS

For sale—Select, thoroughbred New Zealand hare and pure Belgians for breeding purposes. For particulars address **New Zealand Rabbit Warren 18 Grant ave., Santa Cruz, Cal.**

Rufus Red Pedigreed Belgian Hares, big money-makers; start small and grow big; start to-day. **Hare and Feather Yards, Trinity St., Fresno, Cal.**

Thoroughbred Belgians, with or without pedigrees. **The Old Hickory Supply Co., Dept. 5, San Francisco and Los Angeles.**

Keep your rabbits in good condition by using Caldwell's Rabbit Condition Powder. Large package 35c. **Caldwell Bros., Los Angeles. Box 613.**

High-grade Flemish giants. Cohrook Rabbit Company, P. O. box 354, San Jose, Cal.

SALESMEN WANTED

Wanted—Responsible party to take charge of our business in each county handling sale of automatic combination tool, a combined wire fence stretcher, post puller, lifting jack, etc. Lifts or pulls 3 tons, weighs 24 pounds. Sells readily to farmers, shops, contractors, etc. No experience necessary. Descriptive catalogue, prices and terms free upon request. **Harrah Mfg. Co., Drawer O., Bloomfield, Indiana.**

BUSINESS CHANCES

Free for Six Months—My special offer to introduce my magazine "Investing for Profit." It is worth $10 a copy to anyone who has been getting poorer while the rich, richer. It demonstrates the REAL earning power of money, and shows how anyone, no matter how poor, CAN acquires riches. INVESTING FOR PROFIT is the only progressive financial journal published. It shows how $100 grows to $2,200. Write NOW and I'll send it six months free. **H. L. Barber, 499-20W Jackson Blvd., Chicago.**

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

AGENTS WANTED

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

MISCELLANEOUS—FOR SALE

SYMON BROS.
W
R
E
C
K
E
R
S

NEW and SECOND-HAND Building Material foundation to roof.

LARGEST STOCK—segregated. Our own SAWS cut to your ORDER. SPECIAL PRICES. SHORT LENGTHS and car lots. Lumber, plumbing material, doors, sash, chicken netting, nails, electrical material, complete house and barn in one car. Buy all at one place. OUR GUARANTEE OR MONEY BACK ON EVERY ORDER.

11th and Market Sts., 1679 Market St., S. F.

Second-hand and new Water Pipe—All sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weisshaum Pipe Works, 167 Eleventh St., San Francisco.**

Second-Hand Pipe—Largest dealers in standard pipe and screw casings; prices right; guaranteed first-class. **Pacific Pipe Co., Main and Howard sts.**

Special Prices to Consumer on Cedar Fence Posts and Poles. G. R. Kirk Co., 508 Berlin Bldg., Tacoma, Wash.

LIVESTOCK

Grape Wild Farm Thoroughbreds—Guernsey Bulls of Advanced Register Breeding. Berkshire Hogs. Largest herd. Best Eastern strains. All ages for sale. **A. B. Humphrey, Prop., Mayhews, Sacramento Co., Cal.**

Tamworths—The big red bacon and block hog. Send for circular and prices. **Cottle & Hobson Co., Amsterdam, Merced County, Cal.**

Glenview Poland China stock for sale—**Chas. R. Hanna, R. D. 3, Riverside, Cal.**

Mulefoot hogs are best for Pacific Coast. For information write **John Dunlap, Williamsport, Ohio.**

Registered Duroc Hogs, $15, at weaning time. Out of champion ancestors. **Ed. E. Johnson, Turlock, Cal.**

Pacific Guernsey Herd offers a few very choice young bulls. **C. S. Rasmussen, Loleta, Cal.**

Registered Berkshires, $10, at weaning time. **M. D. Good, Mt. Vernon, Wash.**

MACHINERY AND SUPPLIES

For Sale—Farming Machinery—One new Case 60 h. p. steam engine and new separator, 32-inch cylinder, with blower and recleaner; also two new sections of John Deere steam plow. $1,500, or may trade for live stock. **Tomasini Hardware Co., Petaluma, Cal.**

REAL ESTATE

Free—Land and trees to plant it, 1½ miles town, schools, churches, depot, etc.; 20 or 40 acres and 1,000 navels with either tract; foothill soil; plenty water; best climate on earth. You must have funds for teams, implements, buildings, and be reliable. No triflers need apply. I furnish the land and trees and take the risk. Care for trees five years, have option to take half land or pay $2,850 for 20 acres or $5,600 for 40. **F. H. Entriken, Owner, Springville, Tulare Co., California.**

Plant your money in Shasta county; delightful climate, good soil, plenty of water; farms improved and unimproved at $10.00 to $300.00 per acre· 20 acres unimproved olive land $37.50 per acre, worth $100.00; plenty of water for irrigation. 20 acres river bottom land, improved, all in alfalfa, family orchard, good buildings; $260.00 per acre; terms. Write for lists. **Davis & Higgins, Anderson, Cal.**

Victoria, Australia, Wants Settlers—Special inducements, Government land, water railways, free schools· 31 years to pay for farms adapted to alfalfa, corn, grains, fruit, etc. Climate like California. Ample markets. Reduced passages. Special Excursion next November Free particulars from **F. T. A. Fricke, Government Representative from Victoria, 687 Market St., San Francisco, Cal., Box T.**

10 acres ½ mile west Clovis, highly improved to vines, peaches, berries, cheap; good terms. Best water right, ditch and pumping plant, good eight-room house, fine lawn, flowers, 200 chickens, tools. Buy from owner, save commission. Address **Box 75, Clovis, Cal.**

1,000,000 People Could Be Made Happy on well-located, fertile farms, which they could buy for almost nothing in sizes to suit. The State of California sells the land for 1-10 to 1-100 of its value. **Our Free Booklet** tells how. Send for it now. **California State Land Information Bureau Sacramento, Cal.**

One to ten acre irrigated tracts—Finest garden soil, on main line Southern Pacific; adjoins Palo Alto and Stanford University; electric car service to these tracts. Send for handsome illustrated booklet. **Hyxbee & Slocum, Palo Alto, Cal.**

For Sale—105 acres good apple land; about 80 acres with oats; spring water, lots of wood; climate coolest in summer and warmest in winter; water and railroad transportation. Price $4,500; only $1,500 cash. **A. Urquidi, Fort Bragg, Cal. Box 494.**

5 Cents an Acre Cash—Texas school land for sale by the State. You can buy good land for $2 per acre; pay 5 cents per acre cash and no more for 40 years, but 3 per cent interest. Send 6 cents postage for further information. **Publishing Co., Dept. 88, San Antonio, Texas.**

Let us help you buy your choice of overlooked bargains in every county. Some for less than one-tenth selling price of adjoining land. Write for free booklet that tells how and why. **California State Land Information Bureau, Sacramento.**

For sale or exchange for good Bay City property, 5¼ acres of fine land in the city of Grants Pass, Ore. There is a large, unfinished house on it. The land is excellent for subdividing or truck gardening. **Apply to G. Ritz, Sonoma, Cal.**

For sale—20 acres, about half planted to fruit trees, situated in one of the best Bartlett pear regions and the most healthful part of California; price $2,500. **J. Henry Meyer, Chicago Park, Cal.**

Money-Making Farms Everywhere—Deal direct with owner of farm you want; pay no dealers' commission; we send owner's name, address free. **National Farm Exchange, Oakland, Cal.**

For Sale—Two acres rich, sandy loam; half mile from Petaluma; greatest business city West. **Mrs. A. Zeh, Gossage Road, Box 32, Petaluma, Cal.**

For sale—House and barn and two lots at Farmersville, Cal.; good well on place. **P. E. McIntire, Lindsay, Cal. No. Box 122.**

80 acres, all in alfalfa, 8 miles from Fresno, in the San Joaquin Valley; $2,500 cash; 20 years to pay the balance. **E. R. Cosner, Fresno, Cal.**

320-acre grain farm in best wheat growing section Southern Alberta for sale cheap. Apply to owner. **T. A. Bryant, Lake Macgregor, Alberta.**

Ranches, homes, acres, lots, exchanges. Send for free list. **Wilson Bros., Santa Cruz.**

For Sale—Villa sites on the Blue Lakes. Address **G. A. Behrad, Midlake P. O., Cal.**

THE FARMER'S MARKET PLACE

REAL ESTATE—Continued.

Buyer Wanted—40 Acres River Bottom land; 20 acres prunes, 6 acres peaches, 6 acres grapes, 4 acres alfalfa; good 6-room house, barn, fruit sheds, trays, etc. This place is well improved, and from $4,000 to $6,000 net can be taken off it each year. A bargain for only $16,500 with terms. **Davis & Higgins, Anderson, California.**

REAL ESTATE WANTED

Want to Lease two hundred to five hundred acres two-year-old stand alfalfa within reasonable distance from San Francsico or Fresno, with sufficient supply of good water; can use barn and bunkhouse only if erected, otherwise not necessary. Address **Box 102, Orchard and Farm, San Francisco.**

Wanted—To buy about 20 acres alfalfa ranch or alfalfa land, in good alfalfa country; must be O. K. and cheap; nothing but first-class land and at bargain will be considered. Give full particulars; state lowest price. (Am not an agent; ranch wanted for home.) **Address Box 101, Orchard and Farm.**

Farms Wanted. We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property Free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted—Farms from owners for sale. We have direct buyers. Send description. Magazine, particulars, free. **Western Sales Agency, Minneapolis, Minn.**

Young Hollander wishes to buy good farm or land. **Y. H., Box 5898, Examiner, San Francisco.**

BEES AND HONEY

California light amber honey, of finest quality and flavor, delivered by prepaid parcels post to your home in zones one and two; 2-lb. can, 30c; 10 lbs., $1.00; sample, 10c. Price list other grades, sizes and zones free. **Spencer Apiaries Co., Box 11, Nordhoff, Cal.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

HOUSEHOLD SUPPLIES

Most Widely Advertised Cabinet Made, sold on monthly payments. Send for free catalogue. **Old Hickory Supply Co., Dept. 5, San Francisco, Los Angeles, Portland.**

EDUCATIONAL

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

SEEDS, PLANTS, ETC.

Rhubarb Plants—Burbank's Crimson Winter Rhubarb and Wagner's Improved Giant Crimson Winter.

I am now subdividing and replanting and have more plants than I have land for, so am selling at the very low price of 75c per dozen plants for Burbank's; $1.00 per dozen for Wagner's.

Every home garden should have a few dozen of these splendid plants.

If you want to plant for market, write me for special prices and terms for orders of 1,000 or over.

Full cultural directions with each shipment.

Don't delay! Now is the time to plant for fall and winter picking!

Remit by postoffice or express money order or bank draft to **Reginald Bland, San Luis Rey, San Diego Co., Cal.,** stating variety and quantity desired. Orders filled immediately on receipt.

BURBANK'S SPINELESS CACTUS. For cattle, hogs and poultry; green feed all the year; secure the new Burbank Forage and Fruiting varieties; send for catalogue and price list. **J. I. Jewell, Santa Rosa, Cal.**

Spineless Cactus—Be sure you get Burbank's "Santa Rosa" when buying cactus and save disappointment. **Haydon's Nursery, San Juan Bautista, Cal.**

Sour Orange Seed and Seedlings, 30,000 Eureka Lemons, 50c. Otis E. Hyde, 63 North Meredith ave., Pasadena, Cal.

For Sale—Reclaimed Alfalfa Seed. Delivered to your station at 12½c per lb. Write or wire for samples. **E. F. Sanguinetti, Yuma, Arizona.**

Spineless Cactus—Burbank's latest and best varieties, both for forage and fruit. Send for catalogue and price list. **G. D. Cummings, Los Altos, Cal.**

Spineless Cactus—Best by test. Compare prices, etc. Write **J. L. Lawson, San Jose, Cal.**

TREES

Orange Trees—First-class navels and Valencias from carefully selected buds and budded to strong, healthy, vigorous stock; ⅝ and over in diameter. 50c per tree. **A. G. Wright, Fullerton, Cal.**

1,000 seedling avocados, in pots; also nice stock bare root at price. Budded trees, Taft, Harmon and others. **A. A. Quint, R. D. 2, Pasadena, Cal.**

For Sale—Four thousand Washington Navel orange trees, 40c, ¾ to 1½ in. F. O. B. Charter Oak, Cal. **Morris Citrus Nurseries, San Dimas, Cal.**

Citrus Nurseries, Murphy Oil Company, East Whittier, California. Selected stock for sale; inspection invited.

ADVERTISING

In This Department of Orchard and Farm pays in results because the ads are watched by buyers all over California. If you have real bargains to offer, the 3 cents a word rate will find you many customers.

No Glanders Immunity

The vaccine against glanders in horses is not effective in immunizing them against the disease, according to extensive experiments under observation of specialists in the U. S. Department of Animal Industry. Of 13 animals given what protection vaccine would give, nine contracted the disease, which was a big proportion considering the conditions under which they were kept. All vaccinated animals quickly developed the disease from artificial infections, and it seems advisable to abstain from attempting to immunize against glanders by vaccination. As a result of this preliminary work it appears that the control and eradication of glanders must still be dependent upon the elimination of infected horses and the adoption of proper precautions against the introduction of the disease, which latter programme is being carried on with great success by our State Veterinarian.

As a protection against mosquitoes in summer use a few drops of turpentine in a third of a cup of lard or grease and set around. This will not fail to drive them away no matter how many there are.

Heavy Cattle Importations

The list of purebred cattle importations during 1913, just issued by the U. S. Department of Agriculture, shows the extremely rapid strides in improving the blood of our herds, in addition to the wonderful advances made in breeding of stock already here. The following are the number of animals imported of both beef and dairy breeds: Aberdeen Angus, 4 bulls; Alderney, 2 bulls and 98 cows; Ayrshire, 23 bulls and 163 cows; Galloway, 11 bulls and 2 cows; Guernsey, 40 bulls and 738 cows; Hereford, 35 bulls and 33 cows; Holstein-Friesian, 10 bulls and 16 cows; Jersey, 35 bulls and 608 cows; Shorthorn, 84 bulls and 122 cows. The total for all breeds is 244 bulls and 1,780 cows, or 2,024 animals in all.

No comparison of popularity can be made on account of numbers, as the better established a breed is and better represented, the less likelihood of heavy importations, while a popular breed like the Guernsey, with comparatively few cows in America, would naturally receive more additions than say the Jersey, which is abundant all over America. The quarantine on cattle from Europe is of course responsible for the few Holsteins entering, those listed evidently coming from Canada.

MONTHLY COMMENT

(Continued from Page 16).

work make all arbitrary rules that can possibly be avoided highly desirable.

The Eight-Hour Day.

The strong feeling against the amendment universal in rural districts makes much discussion of it rather unwise. It cannot be denied, however, that the idea of cutting down on the amount of work required exerts a widespread attraction and makes a grave danger of the success of the amendment. Since the world began hard work has been the one essential for success, and yet, strange to say, hard work seems unpopular. Granting the feeling of, we should say, the majority that eight hours is enough to work, there are fundamental errors in the amendment. It takes no regard whatever to the uneveness with which much work develops, the difference in kinds of work, emergencies smaller than fires, earthquakes and such, and all such things. It would be perfect, perhaps, if work were made in gobs of eight hours at a time, never more and never less, but somehow or other work don't come like that on the farm, or in many other places. Somehow or other, even in business, rush orders come in, accidents occur that delay matters and call for a little extra rush, and so on, but what is the use talking? If we are going to compel a limit of eight hours, whether it is right or not, the labor unions have the right idea in permitting overtime in emergencies, but demanding extra pay for it. Extra pay or anything else can go hang under the amendment, the work stops or the boss goes to jail. A plan of any kind that don't allow for varying conditions and ordinary emergencies is more than off.

The Oriental Problem.

In view of the serious Oriental problem confronting California today, especially in regard to agriculture, there is a serious aspect to this eight-hour day. You can jail a man for having another work more than eight hours, but you can't jail him for working 16 hours for himself, and you can't jail partners for working that long. It will drive the white farmer who needs to hire help to cut down his acreage until he can do everything himself, but it will be nuts for the Oriental, not only on the farm, but everywhere. He will have leases galore available for small prices; he will have jobs of picking, pruning and work of all kinds fired at him on contract. Instead of hiring fellow Orientals, he will go into partnership with them (?); sure he will (not), and being partners, they will work 12 or 14 hours or any other length of time required and call the American awfully generous, if he is an awful fool, for presenting them with such opportunities and removing himself from competition. There is no lawyer that can beat that game of partnership. Even so, the eight-hour amendment will carry if the majority want it. We don't believe it will mean absolute ruin if it does, but it will help make the present decade a very interesting one in history, and for the excitement of the thing we can be glad we are living in it. If an eight-hour amendment of any kind is going to be passed, it better be prepared on a half-way reasonable basis.

The other day O'Brien met Kerrigan in the street.

"O'Brien, Oi niver was so sick in me life as Oi was last night."

"What ailed ye?" asked O'Brien.

"Oi was eatin' some potatee salad, and Oi swallowed a little potatee bug. Oi ran into the kitchen and took a dose of paris green, and do you know, O'Brien, that young bug nearly kilt me."—New York American.

LATER CROP REPORTS

The following reports were received too late for our regular crop pages:

EL DORADO, J. E. Hassler—Pears will give a 75 per cent crop; plums, 75 per cent; shipping prunes, 20 per cent; peaches, 100 per cent; apples, 100 per cent. There will be a full yield of grain.

MONTEREY, J. B. Hickman—Apricots will make 25 per cent more than a normal crop; peaches promise a 50 per cent crop; prunes and plums, 25 per cent; pears, 60 per cent; apples, 50 per cent; cherries, 25 per cent; berries and grain full crops. Excessive moisture seems to have injured hay prospects in hill sections. Livestock is in the best of condition and feed is abundant.

SACRAMENTO, Howard C. Kercheval—At the present time heavy yields of nearly all kinds are indicated. Apples will give a 100 per cent production; peaches, 90 per cent; pears, 75 per cent; plums, 80 per cent; prunes, 20 per cent; grapes, 110 per cent; cherries, 85 per cent; almonds, 30 per cent; oranges, lemons, olives and pomelos, 100 per cent; table and wine grapes, 110 per cent. Berries of all kinds are giving full yields. The first crop of strawberries is about harvested, and blackberries and raspberries are being harvested. Vegetables of all kinds are producing well. Cabbages, beets and squash are being shipped in carload lots. Grain is giving 10 per cent more than normal yield. There was some damage to hay cut by showers on May 22. Livestock is all in fine condition, owing to abundance of green feed. The showers of the 22nd did no damage to fruit, as most of the cherries were harvested. Oranges and grapes promise an extra heavy crop.

SISKIYOU, Joseph F. Wetzel—Prospects are excellent for pear, apple and plum crops. The yield of berries will be good. Vegetable gardens are looking well and a great many have been planted. Grain is far better than usual. There has been as much alfalfa planted in this county this year as for the past six years taken together. The livestock industry is steadily on the increase in this county also.

The U. S. Chamber of Commerce sends out a general estimate on fruit crops throughout the country as they appeared on May 2, in which it was stated that: "The general prospect for a large yield of fruit of all kinds, with the possible exception of peaches, has not been equalled at any time within the past decade, save in the year 1912." The estimate does not include the northern United States, as spring was not far enough along to indicate much at that time. Something, of course, will have to be allowed for future limitations to production, such as drouth, hot spells at critical periods, etc., and possibly something to the natural inclination for such an institution to publish the rosiest reports possible on any subject. The short peach crop generally will doubtless leave a good market for our shipping peaches. Our very early season without doubt will also quite likely affect markets for California fruits in favorable ways.

I had a large garden and was being overrun with snails. I cut large pieces of raw potatoes and put them under a board and raised the board a few inches from the ground. This I did with the result that in one week a thousand snails had collected in that spot.—H. B., Oregon.

The reason why the world's greatest future grain market is located at Chicago is because there are 400,000,000 bushels of wheat, corn, oats, barley, etc., received and shipped annually by the members of the Chicago Board of Trade.

Some Essentials of Poultry Success

—By Chas. Weeks, Palo Alto—

In my last article I emphasized the fact that modern irrigation was the very first requisite on a poultry ranch located on the Pacific Coast. With plenty of water for irrigating the next requirement is a level, fertile soil, for it takes both water and fertility to produce green feeds in abundance. There is too much fertile land in the world to spend much time in trying to make unfertile soil productive. Start with a soil that is intrinsically fertile and make it more fertile with poultry manure. Start with a poor soil and it will take years to make it produce as much as a naturally fertile soil without fertilizer. Time is money and in no business does it behoove the beginner to start with right conditions as much as in the poultry business.

First water, then soil, then an abundance of green feed growing luxuriantly and you have the first essentials to success on a poultry ranch. With these three things you have the foundation for a profitable poultry business and without them it is impossible to succeed to any noticeable degree. After you have this correct foundation upon which to establish the poultry plant the next essential is sanitary, comfortable houses and clean yards. Do not under any circumstance allow yourself to get fowls without having these first four essentials, water, soil, greens and sanitary houses and yards. Poultry-keeping is a science as clear and definite as any branch of stock raising, and because it is the newest branch of stock raising is the reason that some go wrong in starting.

On the Pacific Coast roomy open front houses with double outside yards are best for laying hens. The perches are arranged along the back side with wire netting directly beneath, so that fowls cannot get to the droppings. Where the droppings fall through wire netting so that fowls cannot get to them, the houses require less cleaning and thus save labor expense.

After the water, fertile soil, luxuriant green growth, sanitary houses and yards comes the stock, and right here is the most particular point in establishing a successful poultry ranch. The stock must be vigorous and prolific or all the other essentials are useless. You must start with stock that has inborn vigor and egg-laying powers. Years of toil and worry can be saved by starting with the best. Hardy stock that has had years of selection and breeding behind it is the only kind to choose in starting a profitable plant. The fine breeds of cattle have been made by years of selection and never will a true breeder mate animals below the standard. Breeders of poultry are realizing this law and are selecting with great care the fowls they mate each year and are making marked progress. Too many mate large numbers of fowls with little selection and raise large numbers of culls each year. Get your foundation stock from fowls that have had years of selection and care behind them.

You can save at least ten years hard work in getting the right stock to start with.

Abundance of water for irrigation, fertile soil, several varieties of green feed, and stock with inherited vigor and producing powers and you have the five essentials for a profitable poultry business. Even with these five essentials thoroughly established you will fall down without experience. Get your experience before spending a single dollar in the poultry field. Go to some successful ranch and work till you know how to hatch eggs, feed chicks, feed laying hens and care for breeding stock.

It may seem to you at the time that you are wasting time in going through the details day by day on a successful ranch and you may even decide before you get through that you will not like the business, which is still all the more of a reason why you should go through the complete detail of a poultry ranch with your own two hands before investing your hard earned money and find out too late that you were unsuited to the business. If it is a business that you find you like and you stay with it till the details are mastered as far as modern poultry science goes, then there is no doubt in the world that you will make a success of the business with the above essentials.

I would advise no one to start in the poultry business without first taking a course of hard work with the two hands mastering the details of correctly caring for fowls at all ages. You must get them sooner or later and you will save money and time by getting them before spending any money ignorantly.

More Money From Eggs.

How much money is lost in California by having eggs spoil in warm weather through the presence of one or more roosters in the farm flock of hens it is hard to say Owing to the high standard of specialized egg farms in California the proportion is probably less than in most States, though the warmth of our summers would tend to make the loss of eggs greater on ranches where roosters run loose in summer and no special care is taken of the eggs. It apparently is a fact that too many people find eggs on their table in which the chick had started to develop some time or other, and the consumption of eggs is cut down as a result. At all events the rooster has no place on most ranches in summer, nor any other time for that matter, as egg production would be greatly increased if the fowls on the ordinary ranch were better bred, so rooster killing would be a good thing.

What the Missouri Agricultural Experiment Station has to say on the matter would apply pretty well to many California ranches.

Bad eggs cause Missouri farmers a loss of beween three and four million dollars annually. Government experts estimate that five per cent of the eggs marketed have developing chickens and that three per cent are "rots" due to the embryo decaying. All these losses could be avoided by keeping roosters out of the flocks, thus having only infertile eggs produced. If Missouri farmers would follow this plan, they could save one and three-fourths millions of dollars annually.

Infertile eggs produced by flocks in which there is no male bird are the only kind that can reach the consumer in good condition during the hot summer months. The only object in having a male bird in the flock is to get fertile eggs for hatching purposes. Last year in July and August nearly one-half the eggs leaving the farms were unfit for food. The farmer, as a result, received a low price. Prevent that loss this year by getting rid of the rooster. Now is the time to act to prevent future losses.

Pine Tar and Toe Picking.

Every one who has attempted to raise a lot of small chickens without a hen to take charge of them knows the great trouble that is likely to develop by toe picking. Among the ways of lessoning trouble from this cause is the use of pine tar. One poultryman claims that the application of a small amount of pine tar to the injured legs of the sufferers acts like a charm. It is a healing application and further serves the purpose by deterring the cannibals from keeping at the picking because of the bitter taste of the tar.

Give Chickens Sour Milk.

Sour milk is utilized in one of the best possible ways by feeding it to chickens. Those who think they get greater returns by feeding it to hogs should remember that the flesh of chickens brings at least twice as much on the market as that of hogs.

Milk and corn are both liked by chickens, and a proper mixture of the two makes one of the best and most appetizing rations for the season when the days are warm and the nights cool. For the best results, the corn should be cracked and soaked several hours in either sweet or sour skim-milk or buttermilk. The corn may be put in pails in the morning and the milk poured on until the top of the corn is submerged two or three inches. When this has been absorbed, more should be added at intervals during the day, and the mixture will be excellent for feeding by night.

A liberal supply of this ration will keep the chickens growing rapidly and insure their being constantly plump and in excellent condition for the market. Try it once, and the fowls will tell you whether or not they like it. Try it two weeks or a month, and they will show you w ether or not it is a good and economical feed.—A. C. SMITH, University Farm, Minnesota.

Cornell University poultry department has recently published the record of a White Leghorn hen that produced 257 eggs in 12 months. These eggs weighed 20½ pounds and were sold on the local market for $7.43. She consumed 110 pounds of feed that cost $1.66.

Grind about one-third of the hen's feed for her and she will be more helpful in filling the egg basket.

The only way to secure a soft-meated bird is to keep them growing "from hatch to hatch."

Winter Wheat in California.

Some interesting facts regarding the position of California as a producer of winter wheat are brought out in a bulletin recently issued by the U. S. Chamber of Commerce.

The positions of those States which produce winter wheat is shown in a chart covering the years from 1904 to 1913. For the ten years California is shown to stand eleventh in rank. This is for winter wheat, not all wheat.

California's position varied greatly during this time. She started off as No. 8, dropped to 9, then went back to 8 for two years, then started to slide to 12 and 18, back to 14 and down again to 16, 20 and 23, so that many States which can hardly be considered to cut any figure in wheat production surpassed her in 1913. California's average, however, was 11, with average production of 12,933 bushels of winter wheat. Kansas has the distinction of being the leader every year named, with an average of 72,741 bushels of winter wheat.

Nothing is said of spring wheat, so that a great wheat producer like South Dakota, which produces no winter wheat at all, practically speaking, stands 37th in the average.

In the bulletin the yield per acre is seen to be far below what it should be by comparison with other countries. The average for several is as follows: Great Britain, 31 7 bushels per acre; Germany, 30.1 bushels; France, 20.4 bushels; Austria, 19.8 bushels; Hungary, 18.4 bushels; United States, 14 1 bushels; European Russia, 9.7 bushels.

The date of the San Mateo County Poultry Association has been fixed for November 12 to 15. C T. Stader has been elected president; Capt. W. W. Hastings, vice president; Arthur R. Schroeder, secretary; Fred West, show secretary; T. L. Green, treasurer; and Geo. A. Kreiss, Kenneth M. Green, M. S. Woodhams, E. J. Talbot and E. N. Brown, the executive committee.

FOURTH printing of the joyous story

SUNSHINE JANE

By ANNE WARNER

Author of "The Rejuvenation of Aunt Mary," etc.

"It makes no difference whether you're a Grouch or a Sunshiner, you will want to become acquainted with 'Sunshine Jane.'"—*Boston Globe.*

Jane Is a Joyous Ray of Sunshine

Frontispiece. 287 pp. $1.00 net; by mail $1.09

Boston: LITTLE, BROWN & CO., Publishers.

Official Directions on Setting a Hen

When we want to set a hen we take one that seems so determined to set that she won't break up without too much trouble, give her a clean new nest in a quiet place from which she cannot go back to her old nest, then place under her as many eggs as she can comfortably cover and let it go at that. The plan works out very nicely, but scientific agriculture must be very elaborate and very scientific, so the following few directions on "How to Set a Hen" sent out by the U. S. Department of Agriculture will probably be found very valuable by many persons who want to do things right. And, seriously speaking, these directions will be instructive and profitable.

As the time approaches for a hen to sit it will be seen that there are a few soft, downy feathers being left in her nest; also she stays longer on her nest, and on being approached will quite likely remain there, making a clucking noise and ruffling her feathers. When a hen sits on her nest from two to three nights in succession, and it is seen that most of the feathers are gone from her breast (which should feel hot to the hand) she is ready to be transferred to a nest which has been prepared for her beforehand. (You don't catch us leaving a hen on her regular nest even one night in succession).

The normal temperature of a hen is from 106 to 107 degrees F., which varies slightly during incubation. Dust the hen thoroughly with insect powder, and in applying the powder hold the hen by the feet, the head down, working the powder well into the feathers, giving special attention to regions around the vent and under the wings. The powder should also be sprinkled in the nest. The nest should be in some quiet, out-of-the-way place, where the sitting hen will not be disturbed. Move her from the regular laying nest at night and handle her carefully in doing so. Put a china egg or two in the nest where she is to sit, and place a board over the opening so that she cannot get off. (Our trouble is in making a hen stay off the nest, not in coaxing her to stay on, as per these directions, but, on with the programme!)

Toward the evening of the second day quietly go in where she is sitting, leave some feed and water, remove the board from the front or top of the nest, and let the hen come off when she is ready. Should she return to the nest after feeding, remove the china egg or eggs and put under those that are to be incubated. If the nests are slightly darkened the hens are less likely to become restless. At hatching time they should be confined and not be disturbed until the hatch is completed, unless they become restless, when it may be best to remove the chicks that are hatched first. In cool weather it is best not to put more than 10 eggs under a hen, while later in the spring one can put 12 to 15, according to the size of the hen.

If several hens are sitting in the same room, see that they are kept on the nests, only allowing them to come off once a day to receive feed and water, the feed to consist of corn, wheat, or both. If there are any that do not desire to come off themselves, they should be taken off. Hens usually return to their nests before there is any danger of the eggs chilling, but if they do not go back in half an hour in ordinary weather, they should be put on the nest.

Where a large number of sitters are kept in one room it is advisable to let them off in groups of from 4 to 6 at a time. The eggs and nests should be examined and cleaned, removing all broken eggs and washing those that are soiled; in the latter case the soiled nesting material should be removed and clean straw added. Nests containing broken eggs that the hen is allowed to sit on soon become infested with mites and lice, which cause the hens to become uneasy and leave the nest, often causing the loss of valuable settings of eggs. In mite-infested nests, the hen, if fastened in, will often be found standing over rather than sitting on the eggs.

After the eggs have been under the hens from 5 to 7 days, the time depending somewhat on the color and thickness of the shells—white-shelled eggs being easier to test than those having brown shells—they should be tested, the infertile eggs and dead germs removed, and the fertile eggs put back under the hen. In this way it is often possible to put all the eggs that several hens originally started to sit on under fewer hens and reset the others. For example, 30 eggs are set under 3 hens at the same time, 10 under each. At the end of 7 days we find on testing the eggs from all the hens that 10 are infertile, which leaves us 20 eggs to reset, which we do by putting them under 2 hens, and have the remaining hen sit over again after she has sat only 7 days. In this way considerable time can be saved in one's hatching operations. (That's good stuff.)

The period of incubation varies somewhat with conditions, so that a hatch may run one or two days over in some cases, due to an accident during incubation or to a low temperature throughout that period, while, on the other hand, it may come off earlier. If through any accident the eggs are chilled or overheated, it is advisable to continue the hatch, testing the eggs after a few days to determine the extent of the damage. Chickens have been hatched from eggs left out of the incubator all night, as well as from eggs which have been subjected to a temperature of over 110 degrees F. for a short time.

There is a lot of good stuff in the bulletin (Farmers 585), especially on the selection and care of eggs for hatching. If things are fixed for it, however, our limited observation makes us believe that the hen to set is one that can't be broken up; that things should be kept clean and free from vermin and the hen permitted to get up and eat and drink whenever she sees fit, being disturbed as little as possible at any time. It is less trouble and brings results.

High Roosts

Because overcrowding in small coops placed near the ground tends to injure the health of young chickens, it is advisable to teach them to use perch roosts as early as possible and practicable. This is the opinion of James G. Halpin, in charge of the poultry department of the University of Wisconsin's College of Agriculture.

Halpin also lays much of the blame for mortality among young chickens from roup and similar diseases during the early winter months to neglect on the part of their owners in seeing that they are placed on roosts early in the season.

When chickens are left out on cold nights in an improvised shelter they are sure to huddle closely together. In this way the bodily temperature is raised above normal, and they become easily subject to colds, which often lead to fatal diseases.

This is the time of the year when a hay or a fodder litter is used to advantage. Where it is not convenient to sprout all the oats necessary, alfalfa hay may be cut into one-inch lengths and boiled or steamed. Alfalfa is particularly good for replacing fresh greenness. It will add variety to the ration, even if there are enough sprouted oats or mangels.

Egg Record Still Stands

The egg record reported in the April issue of 6¾ ounces still stands, apparently, for no new records that approach it have been reported. Country newspapers, private individuals and everybody else will thus be barred from saying that every large egg laid by aspiring hens is the largest egg on record. We are haping, though hardly expecting, that a seven ounce egg will be told of, and would like to know of every egg laid from now on weighing six ounces or over. As a matter of fact, if a person can vouch for the fact, we want to hear of any egg laid any time on the Pacific slope, or anywhere in America for that matter, by a hen of recognized breed, or mongrel either, larger than those reported.

Apparently most people do not realize how big a six-ounce egg is. A four-ounce egg is immense and a six-ounce egg is gigantic. One subscriber, Mrs. D. W., East Oakland, sent in an extremely large egg, which measured 7 inches in circumference one way and 8⅛ inches the other, weighing 4½ ounces. It can be seen that a 6¾-ounce egg is much larger. It was laid by a Buff Orpington hen, as was the Marysville egg, although this breed does not usually lay large eggs.

The contest is open indefinitely, but unless some other hens get busy we will have to postpone further discussion.

Free Book

giving a full account of hatching, raising and careing for chickens, with details of a Complete System of Feeding.

Will be sent to you on application.

COULSON CO.

Box F, Petaluma, Cal.

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50

Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. ct. Use any injector, but Cutter's simplest and strongest. Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (ours or any other), as it affords less protection than fresh. Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly. THE CUTTER LABORATORY, Berkeley, California.

10c brings you "Gleanings in Bee Culture" for 3 months

Bees make orchards pay better. We make this Special Trial subscription offer just to acquaint you with the standard bee journal. Full of hints on the healthful and profitable pursuit of bee keeping. Book on "Bee Supplies" sent free with it. Send stamps or silver in envelope at our risk.

The A. I. Root Co., Box F 58 Sutter St., San Francisco, Cal.

OUR **Baby Chicks** MAKE

Heavy Winter Layers

Chicks from a S. C. white leghorn strain we have been working up for 20 years. Write to-day (a postal card will do) for our special low prices for the next three months. These chicks will make heavy winter layers.

S. C. WHITE LEGHORN BABY CHICKS

Write to-day and get chicks for winter laying and excellent profits.

THE BIHN HATCHERY PETALUMA, CAL.

Largest in the World—Capacity 165,000 Chicks.

Protect Your Chicks

White Diarrhoea is fatal and very contagious. It attacks chicks the first five weeks and kills 60 to 75 per cent of all chicks hatched. May wipe out your whole hatch. Save your chicks by putting in their drinking water

CONKEY'S White Diarrhoea Remedy

Chicks drink freely and doctor themselves. Don't take chances on losing your whole hatch. Keep Conkey's White Diarrhoea Remedy on hand as an effective treatment and preventive measure. Prices 25c and 50c.

Lice Eat Poultry Profits

Lice are responsible for many poultry diseases, poor egg records and great loss of profits. You can get rid of them quickly by dusting your fowls with

Conkey's Lice Powder

A combination of effective lice killing ingredients. Use it on setting hens now, because it Kills the Lice—Doesn't harm Chicks. Price—15 oz., 25c; 48 oz., 50c.

Spray your poultry house and paint the roosts with

Conkey's Lice Liquid.

Thoroughly wipes out these pests that prey on your chickens at night. Qt., 35c; Half Gal., 60c; Gal., $1.00.

Guard your chicks against the deadly head lice.

Conkey's Head Lice Ointment

Kills them every time—doesn't harm chicks. 10c and 25c.

MONEY BACK IF NOT SATISFIED

Ask for Conkey's Practical Poultry Book—IT'S FREE

If your dealer cannot supply you, write direct to THE G. E. CONKEY CO., CLEVELAND, OHIO

Fighting 'Chicken Bugs' in Hot Weather

By Dennis H. Stovall

I have found that the commonsense method employed by my energetic Dutch wife in keeping the house clean and sweet applies equally well in the poultry yard. It is merely a matter of elbow grease, a scrubbing brush or broom, and a cleanser that cleans. Through the warm months of July and August, when "chicken bugs" are at their worst, I try to keep the hen houses clean enough to live in. A bug can't be comfortable when things are clean.

The best combination that I have yet used for scrubbing or spraying a poultry house is a mixture of lime, water and crude carbolic acid. I make the lime water just thick enough to run freely from a spray, or spread easily with a brush-broom, and add to each gallon one-fourth pint of crude carbolic acid. After a poultry house has been swept clean, the nest boxes changed of their old straw and the dropping boards raked, an application of this mixture on floor, walls and roof certainly sweetens up the chicken quarters wonderfully.

I use both the regulation drop-board roosts and saw-horse roosts, and am not quite certain which are best. The saw-horse roosts are more easily removed for cleaning, but as they must be placed on the floor, they necessarily cause a greater amount of inside work in raking out. But for keeping the roosts free of mites and allowing the hens a peaceful sleep, I follow the plan of boring shallow holes into the upper part, using a half-inch bit. Into these holes a mixture of crude carbolic acid and kerosene, in equal parts, is poured twice a month during the hot-weather season. The fumes from this go up into the feathers of the fowls and drive the mites away. The same mixture applied with a lime brush to the under parts of the roost poles and in the nooks and crannies where the little bugs have a tendency to accumulate plays quick havoc.

Removable nest boxes are the most preferable for my use, because of their greater ease in cleansing. As a harbor for "chicken bugs" no part of the hen house is quite as favorable as the nest box that has been allowed to get foul. My experience has led me to believe that the nest box needs a change of straw and a spraying or scrubbing almost as often as the roosts. As I have not yet adapted the trap nest, I find any kind of a box—the kind that the grocer always puts up our "bill of goods" in—very handy for this. Still better, however, is a tin nest box made from an empty five-gallon kerosene can. I cut out one side of the can and build the nest in this. A number of these cans, set end to end, can be made into a uniform row of nests in a hen house.

And in fighting "chicken bugs" during hot weather, the interior of the hen house does not alone need attention. The yard is equally important. Just to prevent the breeding of flies, the sweeping of the yard, gathering up of scraps and litter left by the fowls is well worth while. Rather than allow the chickens to scatter the stuff over all parts of the yard I use board platforms on which to feed them their soft foods, mashes and everything of that sort. These feeding platforms are built about five feet square, and the feed pans, troughs and water pails set in the middle of them. As often as the poultry house is cleaned, the platforms are scrubbed and given a coat of lime and carbolic acid mixture. The feed pails and troughs are cleaned much more frequently.

If I kept a greater number of fowls it would be advantageous, no doubt, for me to adopt plans of greater mechanical worth, but I am giving this as one who follows the raising of poultry as a side issue, yet a side issue of such importance as to demand detailed attention. I have never yet worried much about the "egg problem." I have found that by keeping their quarters pure and clean, and feeding them wholesome rations with all due attention as to quantity and variety, the hens settle the egg problem themselves. In addition to the things mentioned, there is the dust bath kept in a convenient place for the fowls at all times of the year. And even this is "clean." It is a mixture of clean dust from the garden and ashes from the stove. Two-thirds of the quantity used are ashes, as these are very efficient in keeping the hens clean.

Some Poultry Questions

Answered by Chas. Weeks.

I am thinking of changing my stock of chickens. Please tell me how to avoid inbreeding through "Orchard and Farm."—MRS. J. M. C., Lompoc, Ariz.

In answer to the question "How to avoid inbreeding" will say that there are two ways. One way is to procure male birds from some reliable breeder each year that are unrelated to the hens. Another is to mate a small select pen that is unrelated to the balance of the stock on the farm and save the best cockerels from this mating to mate with the hens from the general flock. This latter is probably the surest way to get good new blood. It is very important that new blood be used in matings, for it is only in the hands of the most skillful breeders that inbreeding brings results.

* * *

What can be done for a hen that has a pale comb and keeps moping and refuses to eat or drink and lives some time that way before it dies? The chickens are running out on the farm and are fed grain, grass, charcoal and shells. They are on gravelly land.

Should Black Minorca baby chicks all have dark or lead-colored feet and legs, and also be white under throat?

Will overheating baby chicks in shipping where one-fourth of them die and the rest almost become suffocated leave any lasting injury when they have the best of care afterward?—M. M., Templeton, Cal.

In answer to the question "What can be done for a hen with a pale comb?" will say that the hen probably has liver trouble and unless a very valuable hen, it will not pay to bother with her as a hen once ailing is seldom profitable afterwards. If the hen is very valuable, place her in a yard with plenty of succulent green with fresh water and let her starve it out for a few days and she will probably come around all right.

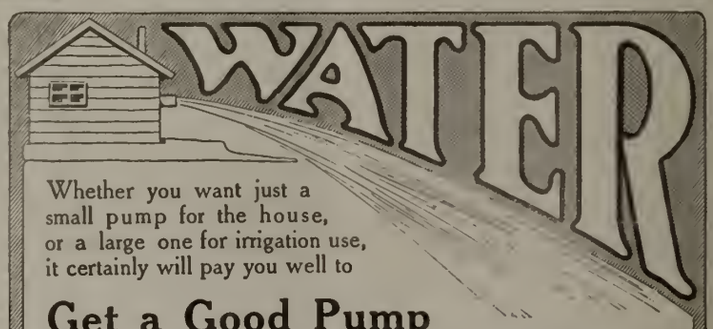
Black Minorca chicks have dark feet and are white under throat. Chicks overheated or smothered on trip are handicapped on the start though many may pull through.

Spring is a healthy season because all outdoors has been disinfected by winter. If the hen house hasn't been disinfected yet, do it now. Water dips will not do in cold weather, but low-grade kerosene, with enough crude carbolic acid in it to give it a distinct odor, will work nicely. It will be most effective on a sunny day.

Mark the cockerel that crows first this spring. He will be early maturing and is likely to be the strongest breeder you'll get.

Fresh air and sunshine are important as well as food. Hens kept in a close, stuffy house without sufficient air and sunshine never lay the maximum number of eggs.

GRAIN BAGS
TWINE
IRRIGATION HOSE
TENTS
WAGON COVERS---CANVAS
DESERT BRAND { WATER BAGS / MILK and BUTTER COOLERS
Write for Catalog and Discounts.
W. A. PLUMMER MFG. CO.
37 FRONT ST.----CORNER PINE----SAN FRANCISCO



Whether you want just a small pump for the house, or a large one for irrigation use, it certainly will pay you well to
Get a Good Pump
The safe way is to get advice from pump specialists like ourselves. As manufacturers we have solved hundreds of pumping problems—and our accumulated experience is at your command. Our advice may save you both money and trouble. We manufacture and sell
Horizontal and Vertical Centrifugal Pumps
Deep Well Pumps, Windmill Pumps, Etc.
THE BEAN IS THE BEE-N TRADE MARK BEST
Let us help you select a pump adapted to your particular requirements. CATALOG 28-B describes Bean Centrifugal Pumps. CATALOG 28-D describes all other pumps (also Bean Distillate Engines). A postal will bring either or both. Why not send now?
BEAN SPRAY PUMP CO.
225 W. Julian Street San Jose, Cal.

Redeem Land by Deep-Drilled Wells!
You can make more money drilling wells for irrigating land with an Armstrong Well-Drilling Outfit than you can in any other business with the same investment. $50 to $75 profits a day made on an Armstrong Outfit. A few hundred dollars invested in an Armstrong outfit will redeem several thousand acres in a single season. Drill any formation, any depth, any place. Gasoline or Steam, Walking Beam, Spudding or Combination Outfits. Write for Free Illustrated Book. If you need a gasoline engine ask for our big engine catalog.

Armstrong Machines positively handle every kind of formation in any part of the country
One man can handle entire outfit.
Perfected machine of our 45 years'
Armstrong Mfg. Co., 301 San Pedro st., Los Angeles, Cal. Home Office and Factory, Waterloo, Iowa.

MAXIMUM PROTECTION AT MINIMUM COST
Comfort for stock, and protection for implements, machinery and crops.

APOLLO ROOFING
and Siding Products are an ideal material for all forms of farm building construction. Made from the well known APOLLO BEST BLOOM Galvanized Sheets. Reasonable in cost, easy to apply, durable. Sold by weight by leading dealers. Send for our "Better Buildings" booklet.
AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg., Pittsburgh, Pa.

The Elf Boy and the Spring

—For the Children—

There once came a little Elf Boy to live on this earth, and he was so much pleased with it that he stayed, never caring to go back to his own world. I do not know where his own world was, or just how he came to leave it. Some thought he was dropped by accident from some falling star, and some that he had flown away, thinking he could fly back again whenever he chose, because he did not know that children always lose their wings when they come into this world. But no one knew certainly, as he never told anyone; and after all, it did not matter, since, as I have already said, he liked the earth so much that he did not care to leave it.

There was a Hermit who lived in the valley where the little Boy had first come, and as he had a room in his house for a visitor, he took him in, and they grew to like each other so well that the little Boy did not care to go away, nor did the Hermit care to have him. The Hermit had not always been a Hermit, but he had become a sorrowful man, and did not care to live where other people lived, or to share any of their pleasures. The reason he had become a sorrowful man was that his only child had died, and it seemed to him there was nothing worth living for after that. So he moved to the lonely valley, and I suppose would have spent the rest of his life by himself, if it had not been for the little Elf Boy.

It was a very lovely valley, with great, green meadows that sloped down to a rippling brook, and in summer time were full of red, white and yellow blossoms. Over the brook there hung green trees, where roots made pleasant places to rest when one was tired; and along the water's edge there grew blue flowers, while many little frogs and other live creatures played there. It was summer time when the little Elf Boy came, and the flowers and the trees and the brook and the frogs made him very happy. I think in the world from which he came they did not have such things that grow and blossom and keep one company. So the Elf Boy was very happy. He did not ask to go to play in the village over the hill, but was quite content with the meadows and the brook side. The only thing that did not please him was that the old Hermit still remained sorrowful, thinking always of his child who had died; and this the Elf Boy did not understand, for in the world from which he came nothing ever died, and he thought it strange that if the Hermit's child had died he did not patiently wait for him to come again.

So the summer went merrily on, and the Elf Boy learned to know the names of all the flowers in the meadow, and to love them dearly. He also became so well acquainted with the birds that they would come to him for crumbs, and sit on the branches close by to sing to him; the frogs would do the same thing, and although the Elf Boy did not think their voices as sweet as those of the birds, he was too polite to let them know it.

But when September came, there began to be a sad change. The first thing the Elf Boy noticed was that the birds began to disappear from the meadows. When he complained of this, the Hermit told him they had gone to make their visit to the Southland and would come back again; and this he easily believed. But as time went on, and the air became more and more still as the last of them took their flight, he began to lose heart.

What was worse, at the same time the flowers began to disappear from the meadows. They were dead, the Hermit said, and in this way the Elf Boy learned what that meant. At first others came to take their places, and he tried to learn to like the flowers of autumn as well as those which he had known first. But as these faded and dropped off, none came after them. The mornings grew colder, and the leaves on the trees were changing in a strange way. When they grew red and yellow, instead of green, the Elf Boy thought it was queer thing for them to put on different colors, and wondered how long it would last. But when they began to fall, he was very sad indeed. At last there came a day when every limb was bare, except for a few dried leaves at the top of one of the tallest trees. The Elf Boy was almost broken hearted.

One morning he went out early, to see what new and dreadful thing had happened in the night, for it seemed now that every night took something beautiful out of the world. He made his way toward the brook, but when he reached the place where he usually heard it calling to him as it ran merrily over the stones, he could not hear a sound. He stopped and listened, but everything was wonderfully still. Then he ran as fast as his feet would carry him to the border of the brook. Sure enough, it had stopped running. It was covered with a hard sheet of ice.

The Elf Boy turned and went to the Hermit's house. By the time he had reached it the tears were streaming down his cheeks.

"Why, what is the matter? asked the Hermit.

"The brook is dead," said the Elf Boy.

"I think not," said the Hermit. "It

Koveralls Keep Kids Kleen

Practical Heathful, Economical Garments for Small Children

Practical. Because they are made in one piece, and can be slipped on or off instantly. They fit and look well, and yet are loose and comfortable in every part.
Healthful. Far superior to bloomers. No tight elastic bands to stop free circulation of blood and retard freedom of motion.
Economical. Saving wear on good clothes—saving washing—so well made they are outgrown long before they are worn out.

Ask Your Dealer For **KOVERALLS**

ALL RIGHTS RESERVED

Made in high neck with long sleeves or Dutch neck and elbow sleeves. Made of blue denim, or blue and white hickory stripes for all the year wear, and in a variety of lighter weight materials for summer wear. All garments trimmed with fast-color red or blue galatea. Sizes 1 to 8 years.

75c the suit A new suit **FREE** if it rips

Awarded Gold Medal at Mechanics' Fair 1913

If your dealer cannot supply you, we will send them, charges prepaid, on receipt of price, 75c each.

Made By

LEVI STRAUSS & CO., San Francisco

The Gasoline of Quality

RED CROWN

—a product of selected grades of California crude oil, distilled and re-distilled, treated for the elimination of all foreign matter and by means of exhaustive laboratory tests, maintained at the most rigid standards of uniformity and high quality—in short, the best gasoline the Standard Oil Company can make.

Red Crown signs are furnished to all dealers handling Red Crown Gasoline. Watch for the Sign or ask our nearest agency about delivery in bulk.

Standard Oil Company
(California)

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

is frozen over, but that will not hurt it. Be patient, and it will sing to you again."

"No," said the Elf boy. "You told me that the birds would come back, and they have not come. You told me that the trees were not dead, but their leaves every one are gone, and I am sure they are dead. You told me that the flowers had seeds that did not die, but would make other flowers; but I can not find them, and the meadow is bare and dark. Even the grass is not green anymore. It is a dead world. In the summer time I did not see how your could be sorrowful; but now I do not see how anyone can be happy."

The Hermit thought it would be of no use to try to explain anything more to the Elf Boy; so he said again, "Be patient," and tried to find some books in which he could teach the boy to read, and make him forget the outside world.

The next time they went for a walk to the village over the hill, the Elf Boy was very curious to see whether the same thing had happened there, that had happened in their valley. Of course it had; the trees there seemed dead, too, and the flowers were all gone from the dooryards.

The Boy expected that everyone in the village would now be as sorrowful as the Hermit, and he was very much surprised when he saw them looking as cheerful as ever. There were some boys playing on the street-corner, who seemed to be as happy as boys could be. One of them spoke to the Elf Boy and he answered: "How can you play so happily, when such a dreadful thing has happened to the world?"

"Why, what has happened?"

"The flowers and trees are dead," said the Elf Boy, "and the birds are gone, and the brook is frozen, and the meadow is bare and gray. And it is so on this side of the hill also."

Then the boys in the street laughed merrily, and did not answer the Elf Boy, for they remembered that he was a stranger in the world, and supposed he would not understand if they should try to talk to him. And he went on through the village, not daring to speak to any others, but all the time wondering that the people could still be so happy.

As the winter came on, the Hermit taught him many things from the books in his house, and the Elf Boy grew interested in them and was not always sad. When the snow came he found ways to play in it, and even saw that the meadow was beautiful again though in a different way than it had been in the summer. Yet still he could not think the world by any means so pleasant a place as it had been in the time of flowers and birds; and if it were not that he had become very fond of the Hermit, who was now the only friend he could remember, he would have wished to go back to the world from which he had come. It seemed to him now that the Hermit must miss him very much if he should go away, since they two were the only people who seemed really to understand how sorrowful a place the earth is.

So the weeks went by. One day in March, as he and the Hermit sat at their books, drops of water began to fall from the eaves of the roof, and they saw that the snow was melting in the sunshine.

"Do you want to take a little walk down toward the brook?" asked the Hermit. "I should not wonder but I could prove to you to-day that it has not forgotten how to talk to you."

"Yes," said the Elf Boy, though he did not think the Hermit could be right. It was months since he had cared to visit the brook, it made him so sad to find it still and cold.

When they reached the foot of the hillside the sheet of ice was still there, as he had expected.

"Never mind," said the Hermit. "Come out on the ice with me, and put down your ear and listen."

So the Elf Boy put down his ear and listed; and he heard, as plainly as though there were no ice between, the voice of the brook gurgling in the bottom of its bed. He clapped his hands for joy.

"It is waking up, you see," said the Hermit. "Other things will waken, too, if you will be patient."

The Elf Boy did not know quite what to think, but he waited day after day with his eyes and ears wide open to see if anything else might happen; and wonderful things did happen all the time.

The brook sang more and more distinctly, and at last broke through its cold coverlet, and went dancing along in full sight. One morning, while the snow was still around the house, the Elf Boy heard a chirping sound, and, looking from his window, saw a red robin outside asking for his breakfast.

"Why," said the Boy, "have you really come back again?"

"Certainly," said the robin. "Don't you know it is almost spring?

But the Elf Boy did not understand what he said.

There was a pussy willow growing by the brook, and the Boy's next discovery was that hundreds of little gray buds were coming out. He watched them grow bigger from day to day, and while he was doing this the snow was melting away in great patches where the sun shone warmest on the meadow and the blades of grass that came up into the daylight were greener than anything the Elf Boy had ever seen. The pink buds came on the maple trees, and unfolded day by day. And the fruit trees in the Hermit's orchard were as white with blossoms as they had been lately with snow.

"Not a single tree is dead," said the Elf Boy.

Last of all came the wild flowers —blue and white violets near the brook, dandelions around the house, and a little later, yellow buttercups all over the meadow. Slowly but steadily the world was made over, until it glowed with white and green and gold.

The Elf Boy was wild with joy. One by one his old friends came back, and he could not bear to stay in the house for many minutes from morning to night. Now he knew what the wise Hermt had meant by saying, "Be patient," and he began to wonder again that the Hermit could be sorrowful in so beautiful a world.

One morning the church bells in the village—whose ringing was the only sound that ever came from the village over the hill—rang so much longer and more joyfully than usual, that the Elf Boy asked the Hermit why they did so. The Hermit looked in one of his books, and answered:

"It is Easter Day. The village people celebrate it on one Sunday every spring."

"May we not go also?" asked the Elf Boy, and as it was the first time he had ever asked to go to the village, the Hermit could not refuse to take him.

The village was glowing with flowers. There were many fruit trees, and they, too, were in blossom. Every one who passed along the street seemed either to wear flowers or to carry them in his hand. The people were all entering the churchyard; and here the graves, which had looked so gray and cold when the Hermit and the Boy has last seen them, were beautiful with flowers that the village people had planted or had strewn over them for Easter.

The people all passed into the church. But the Hermit and the Elf Boy, who never went where there was a crowd, stayed outside where the humming birds and the bees were flying happily among the flowers. Suddenly there came from the church a burst of music. To the Elf Boy it seemed the most beautiful sound he had ever heard. He put his finger on his lip to show the Hermit that he wanted to listen.

These were the words they sang:

"I am He that liveth and was dead; and, behold, I am alive for evermore!"

The Boy took hold of the Hermit's hand and led him to the church door, that they might hear still better. He was very happy.

"Oh," he cried, "I do not believe that anything ever really dies."

The Hermit looked down at him and smiled. "Perhaps not," he said.

When the music began again a strange thing happened. The Hermit sang the Easter song with the others. It was the first time he had sung for many years.

(Copyright, 1908. The Bobbs-Merrill Company.)

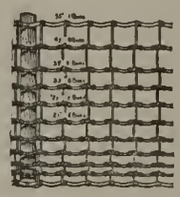
Lack of success in life is due to mental dullness.

Mental dullness usually comes from imperfectly nourished brains.

Good Sewing Suggestions

My small son outgrows his suits so quickly that I have to put deep tucks under the hems of his waists. I have learned to do this with very fine thread—I use ninety—because when it is necessary to let out the tuck a quick pull will break the thread without injuring the cloth. It is much quicker to take out such a tuck than it is one put in with heavier thread, in which case the threads must be drawn, as they cannot be broken.

To darn tablecloths, large garments, underclothes, etc.: Take the garment and place in an embroidery hoop; make the stitch of sewing machine larger than for sewing. Sow back and forth, as you would by hand. Some remove the foot, but it can be done without. It makes a neater, quicker and easier darning than by hand. I had a white tablecloth torn on line. After darning this way and laundering it could hardly be seen when on table. —MRS. G. A. PETERS, R. F. D. Box 109, Napa, Cal.



KOKOMO STEEL WIRE FENCE

Either square of diamond mesh, FOR POULTRY, HOG OR STOCK USE. Many styles to select from. Satisfaction guaranteed. Send for Catalogue with net factory prices.

California Anchor Fence Co.

Market and Aurora Streets - - - - - Stockton, Cal.

The Taste Tells

Ghirardelli's *"hermetically sealed"* Ground Chocolate retains its rich, full flavor, a little goes a long way. Bulk chocolate loses its strength and flavor, absorbs dirt and germs. Which kind will you have?

D. Ghirardelli Co.
Since 1852

Write us today for a sample can and you'll serve this health beverage at every meal.

The Household Exchange

The value and number of the contributions that come in every month have convinced us that a change in the method of making awards to our household contributors will be necessary. Heretofore we have been giving silverware and other expensive articles to a few of the contributors whose suggestions seemed most valuable, but this had the disadvantage of overlooking those whose contributions were worthy of high commendation, though possibly not ranking among the five best. At the same time the expense of these expensive awards has prevented us from remembering other contributors to our household department as we would like.

Therefore, although this month we give the same prizes as usual, in the future we shall give simpler and less expensive articles to those whose suggestions are given special mention and remember others whose suggestions are used with some article of value in sewing room or elsewhere in the house. This will hold good only with those suggestions sent in after this date. Those already on hand we have the privilege of using, according to announcements in previous issues. Remember therefore that similar prizes to those given this month will not be given in the future, although every contribution to our household contest which is used will be paid for by an article which will prove of value in the home. We expect, as before, to award the most valuable articles to the suggestions which seem to be most meritorious.

The names of the prize winners in the Household Exchange this month and the prizes they are given are as follows:

First prize (Mrs. Emma Carlson, Richvale, Cal.); twenty-six piece silver set----------$8.00

Second prize (Mrs. Frank Morin, Healdsburg, Cal.); set of six silver tablespoons and six teaspoons ---------- 4.00

Third prize (Mrs. Harry Kaiser, Lompoc, Cal.); set of six silver knives and forks---------- 3.50

Fourth prize (Mrs. Wm. E. King, Castle Dale, Utah.); silver sugar shell and butter knife--- 2.00

Fifth prize (Mrs. I. D. Streeter, Placerville, Cal.); food chopper 1.75

For this coming month (July) we would like to hear of old fashioned remedies, or remedies for various physical troubles that can be applied simply at home. As a matter of fact, we really don't want to hear of them, but think many of our readers will and that lots of fine things will be sent in that should prove of interest and value to a large percentage of our readers. Of course most of the readers live where good health should naturally occur, but nearly every family has some physical ailment develop in some member once in a a while, and even where sickness is absent, injuries of greater or less importance are quite sure to occasionally occur.

And when readers send in suggestions it might be well to suggest topics of value that have not been discussed. Those treated thus far have aroused much interest, but others overlooked may be of more interest yet.

The following rules must be observed in sending suggestions:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only, and sign name and address after each suggestion.

Not more than two suggestions a month may be sent by one person. Do not send a letter with your suggestion. The suggestion itself is enough.

This contest is not confined to California alone, but is open to "Orchard and Farm" subscribers in any State.

Address all your suggestions to Household Editor, "Orchard and Farm," Hearst building, San Francisco, Cal.

The following are the suggestions for which prizes were given as in the list above:

Cooling by Evaporation.

Nail together a frame, consisting of corner boards, cleats for shelves and a solid boarded top and bottom. Dimensions of frame for average family should be about 2 feet wide by 1½ feet deep by 4 feet high. Fit in two or three shelves. Cover both of the 1½ feet sides and one of the 2 feet sides (which makes back of cooler) with burlap, tacking it down snugly. Then make a frame of 2x4 feet of 1x4 inch boards for the door, and cover this also with burlap. Fasten to cooler with hinges and attach a hook and eye for fastening same as those used on screen doors. For the water tank take a shallow box that will fit the top of cooler and line it with common oilcloth, taking care in folding oilcloth in corners of box so that it will not leak. Tack oilcloth securely around top of box. Cut a piece of heavy cloth, woolen is best, into eight strips, two strips for each side. Lay strips of cloth over edge of tank, allowing one end to rest in tank and other end to come down well on burlap covered sides. When tank is filled with water the strips of cloth will siphon the water down and cooler will be wet continuously and the burlap being so thin will allow a cool moist current of air through the cooler all the time.—MRS. EMMA CARLSON, Richvale, Cal.

To Make Lemonade.

Lemon syrup ready for lemonade at a minute's notice on a hot day is a convenience. Melt one pound sugar with water enough to keep from burning, and boil until it spins a thread. Add the juice of one dozen lemons and rind of four, heat thoroughly, but do not boil. Strain, cool and bottle. Use one tablespoon to a glass.—MRS. FRANK MORIN, Healdsburg, Cal.

To Keep Butter Cool.

Take a pan a few inches deep and set a soup plate therein. Fill the pan with cold water almost to the top of the plate and then have your butter in a saucer and set the saucer on top of the plate. Put a cheese cloth over butter and let the ends fall in the water. Set in a cool place and the butter will be hard on the hottest of days. — MRS. HARRY KAISER, Lompoc, Cal.

Cool, Fly-Free Room.

A sponge placed in a saucer of hot water to which a spoonful of oil of lavender has been added will rid a room of flies.

A bunch of willows set in a bucket of water or a sheet wrung from ice water and hung in a room will help wonderfully in cooling and refreshing it.—MRS. WM. E. KING, Castle Dale, Utah.

Keeping Milk Cool.

Cut a slot across the bottom of a tin cup. Cut off the foot of an old stocking or the sleeve of an undershirt and pull the small end into the slot. Draw the other end over the bottle of milk with the cup resting on top. Now place the bottle in a pan and fill the cup with water. Enough water flows through the slot to keep the cloth damp. Keep in a cool, shady place and milk will not sour.—MRS. I. D. STREETER, Placerville, Cal.

The additional suggestions by various readers will also be of interest and value while warm weather endures.

Egg Lemonade.

Make a thin syrup by boiling 1½ pints of water with two cupfuls of sugar; add the grated rind of one lemon and the juice of two, cool with ice; just before serving whip lightly into it two eggs beaten separately, and a small quantity of bicarbonate of soda; serve while foaming—MRS. STELLA HAGGARD, Occidental, Cal.

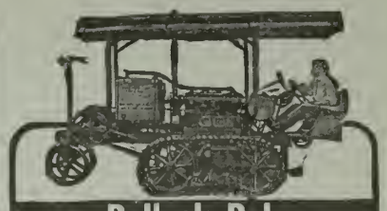
Cold Cloths Without Ice.

One of the most useful hot weather helps is cold cloths for the sick room. These can be obtained without the use of ice. In case of fevers or sick headache or weakness a cold cloth on the forehead or base of the brain is one of the most comforting things. All that is necessary is to wet a linen cloth, wave it to and fro in the air, fold it and place it on the patient. Have another cloth ready and prepare it in the same manner. These cloths have a grateful and more lasting coolness than those prepared by using ice.—MRS. A. J., Plumas County.

Hot Weather Cooking.

In warm weather it is advisable to arrange for the mid-day meal when the fire is started to get breakfast. If one has a fireless cooker, meats, beans etc. can be started. Macaroni and cheese, rice and cereals cook to perfection, as do the different kinds of fruits. Berries make an ideal dessert. In making pie crust make two or three pastry shells at one time and later add fruit and the white of egg beaten stiff and sweetened to taste; then put over the fruit and put in oven ten minutes; set aside until dinner.—E. S. DENNER, Santa Rosa, Cal.

If bothered very much by flies alighting on screen doors, take a clean flour sack and saturate it with linseed oil and carbolic acid and tack on upper portion of the screen doors on the outside.



Bullock Baby Creeping Grip Tractor

Another notable achievement of the Bullock Tractor Co. Pronounced by expert agriculturists the ideal type and size tractor for small farms. Its low price, adaptability to do every kind of traction work and its low cost of operation makes it quick and big profit-maker on farms even as small as 160 acres.

One important feature of this tractor is that it steers with the creepers at the same time with the front wheels, permitting short turns and operating close into fence corners, the machine can turn within its own length.

Interesting literature describing the Bullock Baby 30-20 H.P. also 3 larger sizes with prices sent on request. Address

BULLOCK TRACTOR CO.
1807 Diversey Parkway, Chicago

Works Easy On Any Job

Especially Adapted for Small Farms and Orchard Plowing.

Get Prices

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.

Largest pipe works in the West.

WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted **FREE**
Watson E. Coleman, Patent Lawyer, Wash., D. C.

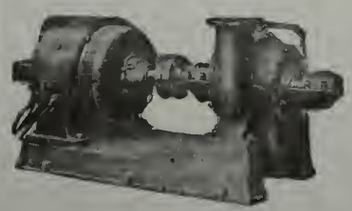
WEEK'S POULTRY RANCH

can supply egg farmers with four months old cockerels for next year's breeders at $1.00 each. Now is the time to get new blood at almost market prices, from large, vigorous, heavy-laying stock in WHITE LEGHORNS that have been bred for years for egg production.
CHAS. WEEKS, Palo Alto, Cal.

Make $2000.00 more per Year

You Can Make Big Money With a well machine that makes irrigating wells fast and at a low cost. Demand for such wells is unlimited in California and the entire Southwest.
The best and fastest machine for this work and this territory is the
IMPROVED POWERS COMBINED BORING AND DRILLING MACHINE
Bores thru gravel, sand and clay like a streak of lightning. If rock is struck it drills thru that. Forces casings perperfectly. One man and one team can run it. You can make $1 an hour for your spare time.
Write today for catalog and EASY PAYMENT proposition.
LISLE M'F'G. CO., Dept. 1, 625 3d St., S. F.

WORTHINGTON
Irrigating Machinery



Our name has stood for highest quality machinery since 1850.

Pumps and Engines

Complete plants installed, electrically or gas engine driven. Pumps are water balanced and are for belted or direct connection.

SIZES CARRIED IN STOCK
Pumps, 1-inch to 12-inch.
Engines, 1½ H. P. to 40 H. P.

Our 80-page finely printed and illustrated Bulletin of Irrigation Number O. F. should be read by every irrigationist. It is the only complete book of its kind. Sent without cost on request.

Henry R. Worthington, 306-308 Sharon Building
San Francisco

Child Training--'Do' Better Than 'Don't'

If we will only occupy hands, heads and hearts with the good and true, we need to concern ourselves very little with the bad and false. For example, if a child is inclined to be cruel to birds or other animals, instead of talking to him so much about his cruelty, endeavor as you have opportunity, to interest him in the many curious habits of animals, the building of their nests and homes, and the devotion of the mother to her young. Picture to him the life of constant fear and danger that these timid creatures live, never safe, always alert. Call his attention to the provision made by our heavenly Father for their safety. Tell him of the preparations made by the wild animals for winter, reminding him that no such preparation is needed for domestic animals, as they have been intrusted to our care. With suitable stories lead him to sympathize with them in their suffering when robbed of their young or otherwise mistreated, and teach him that it is the privilege of the strong to protect the weak.

Don'ts antagonize the child and prepare the way for a spirit of opposition and rebellion. Mrs. Hannah Whitall Smith tells of a little boy who said to his playmate, "Let's cut ourselves with this knife." When asked why he wanted to do that, he said, "Because Mother told me not to."

It's human nature the world over to prefer "Do" to "Don't." Much better to find a safe course for the restless torrent of activity than to attempt to dam it up.

Another danger in dont's is that they frequently suggest to the child the very course we wish him to avoid and which but for us, he would never think of following. No doubt many a poor fly has lost his legs and wings because so many children have been told that this is the thing they must never do. Did you ever hear boys instructed on the wickedness of cruelty to animals in such a way as to suggest new and unheard of devices of torture, making it almost certain these would be remembered and practiced later if the opportunity occurred? Thoughts make character. All action, right or wrong begins in thought. Each repetition of the thought paves the way for the action; hence, to even suggest the wrong is to tempt to sin.

Judicious praise is a great help in child training. Sometimes a fault may be entirely cured by praising the opposite virtue. Watch the careless, untruthful child for exact statements and then show your approval if you want him to love the truth. Commendation of a generous deed will incite to greater generosity than any amount of talk about the meanness of selfishness. Books, public addresses and sermons that praise the good and true in life, are always helpful. Nothing saves like right ideals.

Valuable Hints for the Kitchen

Contributed by Our Readers

Scraper for Sink—My most used kitchen convenience is a little zinc scraper about 3½ inches square, with two corners clipped off to shape it to the hand, and bent through the middle. I scrape perfectly clean all the pots and pans of every description without the least injury to them and I never use anything else for the breadboard. It is just the thing to remove the crust that forms hard on the inside rims of cooking utensils and keeps the frying pans as smooth as glass. It is used for lifting delicate cookies and doughnuts from the board. All scouring is done in a jiffy with a few turns of the scraper. —MRS. F. A. GOEBEL, Crescent Mills, Cal.

Bicycle Clips for the Sleeves—A pair of bicycle clips attached to the rolled up sleeves will be found useful in keeping the sleeves up when washing dishes. The sleeves will not fall down and the daintiest waist may be kept clean.—MRS. W. HARVEY CRAWFORD, Salem, Ore.

Chloride of Lime for Sink—Chloride of lime is fine for whiting sink if sprinkled all around and moistened. Leave over night or a few hours, wash clean and your sink will be nice and white and save scrubing and wearing off of enamel.—MRS. F. E. RACKER, San Gabriel, Cal.

Potatoes Better than Lard.—In making griddle cakes rub the pan with raw potato instead of lard. Your cakes will be nice and brown and the house will not be smoky as it is with hot grease.—MRS. FRANK SWANSON, Fallon, Cal.

To Polish Silverware.—A quick and easy way to polish tableware is to take a piece of aluminum and a small teaspoonful of sal soda to each quart of boiling water. Put the silver in and let stand a few minutes. Remove and rub with a dry, clean cloth.—MRS. ORRIN G. WILSON, Covelo, Cal.

To Polish Kitchen Range.—Mix stove polish with soap suds, a little molasses or syrup and a teaspoonful of vinegar and apply while stove is warm, though not hot. Polish with brush and you will have a shine on your kitchen stove that will more than reward you for your work and last for several days.—MRS. S. C. COOK, Elko, Nev.

To utilize flour sacks—I had such an accumulation of flour sacks the idea struck me to make kitchen aprons of them. After bleaching (by scalding and hanging in the sun a few times), use two for an apron—one for the front, the other, cut side gores and ruffle for the bottom, belt and pocket. I trim some with rickrack braid. They make nice, neat looking aprons and have the advantage of being easy to launder.—ELIZABETH DICKINSON, 905 Second ave., Great Falls, Mont.

The homely flour sack can be utilized for many useful articles—the large 100-lb. size can be purchased at bakers for 25c per dozen. Remove letters by rubbing good with soap and dipping in kerosene, roll up for a couple of hours, wash and boil. With the addition of lace you can make common corset covers, underwaists and drawers for children, sash curtains, pillow slips, and by dyeing them brown or blue, trimming with cotton braid, make strong dresses and bloomers, also wash suits for little tots. Hemstitch on machine and they make nice protectors at children's places at the table, thereby saving tablecloths.—MRS. GEO. JOHNSON, Ripon, Cal.

Cures for Snake Bite

The request by one of our readers last month for a satisfactory cure for snake bite has brought other recipes than that of the permanganate of potash we suggested.

Mrs. Caroline W. McKinlay, Salem, Oregon, has this to say:

"For the benefit of Mrs. C. L. J., Soledad, I would recommend the liberal use of coal oil and salt for snake bites, used freely on the affected part. A year or two ago I read of a case in Idaho, where a child was bitten by a rattlesnake. While waiting for the arrival of the doctor, the mother thoroughly bled the wound, then applied kerosene and salt in generous quantities. When the doctor arrived the child was doing so well that he said no futher treatment was necessary. This remedy has the advantage of being always at hand.

"It is also excellent for use in cases of felons, and similar affections of the hand. If treatment is begun as soon as the felon or whitlow manifests itself, the growth is soon killed. The application has been known to kill a felon when so far advanced as to be almost unbearably painful. It can be bound on the finger, and renewed by dipping into a cup containing the mixture."

Mrs. William E. King of Castle Dale, Utah, has two methods of procedure to suggest which look to be strong enough to give results. She states:

"Tie a bandage tightly above the bite. Leave the wound to bleed and draw from it what poison one can by sucking the wound (unless you have a sore mouth). Cauterize the wound with a caustic or a hot iron or coal. Give alcoholic liquors and strong coffee and dress the wound with equal parts of oil and ammonia. Or, after sucking give the patient a teaspoonful of olive oil as long as nausea lasts and also dress the wound by applying a piece of cotton two inches square saturated with the oil every twenty minutes."

One cup Flour
One Egg
One cup Milk

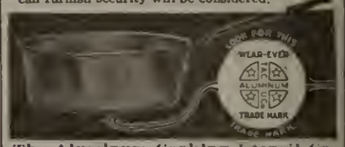
Delicious Pop-Overs from the
"Wear-Ever" ALUMINUM MUFFIN PAN

Beat with an egg beater until bubbles appear. Pour into "Wear-Ever" Aluminum Muffin Pan. Bake without turning the pan. Aluminum ware gets hot more quickly and stays hotter than other ware. "Wear-Ever" utensils cut down labor and time and money so fast that if you once use one you will soon have a whole "Wear-Ever" kitchen.

Replace utensils that wear out with utensils that "Wear-Ever"

Write for booklet, "The Wear-Ever Kitchen" which explains how to improve your cooking

WANTED: Men to demonstrate and sell "Wear-Ever" specialties. Only those who can furnish security will be considered.



The Aluminum Cooking Utensil Co.
Dept. 63, New Kensington, Pa., or
Northern Aluminum Co., Ltd., Toronto, Ontario
Send prepaid 1 quart "Wear-Ever" Stewpan. Enclosed is 20 cents in stamps—money refunded if not satisfied.
Name.....
Address.....

HEALD'S

Schools Located in
San Francisco, Oakland, Fresno, San Jose, Sacramento, Stockton, Chico, Reno, Nev.; Santa Cruz, Los Angeles, Riverside, Long Beach.
Write for Prospectus to the school you wish to attend.
Main Office, Post st. and Van Ness ave., San Francisco.

Meals on Time

A good oil stove gives full heat just as soon as it's lighted. There's no waiting for the fire to catch up or the oven to heat. Meals can be started later and still be served right on time. That means less work and less time in the kitchen.

New Perfection
OIL COOK STOVE

burns kerosene, the clean, cheap fuel and gives an intense heat that can be regulated just as you want it. It does all sorts of cooking and baking just as well as a wood or coal stove—and without tainting the food. Don't cook in a hot kitchen this summer. Don't lug coal and wood and ashes. Get a New Perfection. It saves all this trouble and it's economical, too. Ask your dealer for the New Perfection.

Standard Oil Company
(California)

FOR BEST RESULTS USE PEARL OIL

Useful and Up-to-Date Patterns

No. 5242—Ladies' Russian Coat Waist. Having long or short sleeves, high waist line, attached three-piece peplum with lower front edge square or round. High or open neck. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 2 yards 36-inch material. Price 15 cents.

Embroidery design No. 11898; transfer pattern, 15 cents.

No. 5624—Girls' Dress. Without lining. Having high neck, peforated for square neck; long one-piece sleeves combined with body and perforated for short sleeves, and attached straight gathered skirt with straight gathered tunic. Suitable for flouncings. Sizes 6, 8, 10 12 and 14 years. As illustrated in front view, size 8 requires 6½ yards 18-inch flouncing, with 1¼ yards beading 2½ inches wide for the belt. As in back view, size 8 requires 3 yards 36-inch material and size 14 will require 5¼ yards 27-inch material, 3¾ yards 36-inch material or 3¼ yards 44-inch material. Price, 15 cents.

No. 5424—Misses' Waist. With lining having long or short sleeves; high, round, square or V neck. Outer front, back and sleeves in one piece. Sizes 14, 16, 18 and 20 years. Size 16 requires 2 yards 36-inch material. Price, 15 cents.

No. 5709—Ladies' One-Piece Dressing Sacque. May be made with or without collar and cuffs. Sizes, 32, 34, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3¼ yards 36-inch material. Price, 15 cents.

Embroidery design No. 11904; transfer pattern, 10 cents. Scallop No. 11661; transfer pattern, 15 cents.

No. 5675—Girls' Dress. Without lining and with or without bolero. High neck with standing collar or open neck with round collar. Long one-piece sleeves perforated for short sleeves, and attached straight side-plaited skirt, closing in back. Sizes, 4, 6, 8, 10, 12 and 14 years. As illustrated, size 8 requires 4¼ yards 27-inch material, with ½ yard 24-inch contrasting material for bolero. Price, 15 cents.

No. 5689—Girls' Apron. The pattern is cut in sizes for 2, 3, 4, 6, 8, 10 and 12 years. Size 2 requires ⅞ yard of material 36 or 44 inches wide, or 1¾ yards 27 inches wide. Size 8 will require 1⅛ yards of material 36 or 44 inches wide, or 1⅞ yards 27 inches wide. Price, 10 cents.

No. 5678—Childs' Coat and Hat. Coat having long two-seam sleeves combined with body. High neck with round collar or open neck with square collar. Lower front edge straight or rounded. It may be made with crown gathered or buttoned to brim. Sizes 1, 2, 3, 4, 6 and 8 years. For 4 years the coat with large collar requires 1⅜ yards 54-inch material, and hat requires ⅞ yard 27-inch. Price, 15 cents.

Scallop No. 11854; transfer pattern, 10 cents.

No. 3914—Child's Diaper Drawers. Sizes ½, 1 and 2 years. Size ½ or 1 requires 1 yard 36-inch material. Price, 10 cents.

No. 5683—Child's Dutch Rompers. Consisting of a blouse to be slipped on over the head, having long one-piece sleeves perforated for short sleeves, and an adjustable shield; also separate side-closing bloomers. Size 1, 2, 3, 4, 6 and 8 years. If made as illustrated, size 4 will require 1⅝ yards 32-inch light material with 1⅞ yards 32-inch dark material. Or, all of one material, size 1 will require 3¼ yards 32 inches wide. Price, 15 cents.

No. 5313—Misses' Straight Gathered Skirt. With high waistline. Three-piece foundation with straight gathered flounce. Suitable for bordered material or flouncing. Width of foundation about 1½ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 2⅝ yards 36-inch material. Price, 15 cents.

Beading design No. 11977; transfer pattern, 15 cents.

No. 5695—Sunbonnet. Cut in sizes for ladies, misses, girls and children. Ladies' size requires ¾ yard 27-inch material, and misses', girls' or children's size will require ⅝ yard 27-inch material. Price, 10 cents.

Embroidery design No. 11976 and scallop No. 11747; transfer pattern of either number, 15 cents.

No. 5706—Ladies' Waist. Having high waistline, adjustable shield, long one-piece sleeves perforated for short sleeves and attached two-piece tunic. No lining. Sizes 32, 34, 36, 38, 40 and 42 bust. Size 36 requires 2¼ yards 54-inch material, with ½ yard 27-inch contrasting material, and ⅝ yard 18-inch net for shield and standing collar. Price, 15 cents.

Address all pattern orders to Household Department "Orchard and Farm," Hearst building, San Francisco, Cal.

Farm Nuisances.

Deliver us from the breachy cow;
The balky horse and the worthless cur;
Likewise the gaunt, chicken-eating sow—
At breakneck speed we would flee from her!

The good road brings the market nearer your farm and adds materially to the value of the place whether you want to sell or live there.

The Irrigated Land

Through countless centuries I slept,
Sun-baked and thirsty to the core,
While over other lands there crept
The moisture plentiful—and more.

Day followed day—no living thing
Upon my famished bosom grew;
No song of birds, nor anything
That other lands in fullness knew.

Shunned was I by the march of man,
Counted as treacherous and base;
By men and beasts placed 'neath the ban
And marked with scorn—the desert waste.

They came! and waked me from my sleep,
Held to my thirsty lips the cup,
And drinking, drinking long and deep,
My head, in gladness, I held up.

And now across my fertile fields
The farmer takes his busy way,
In glory my dominion yields
Its richest treasures day by day.

The waving grass, so cool and sweet,
Bedecks the one-time desert place;
Ashamed no more, I gladly greet
My children, men, now face to face.

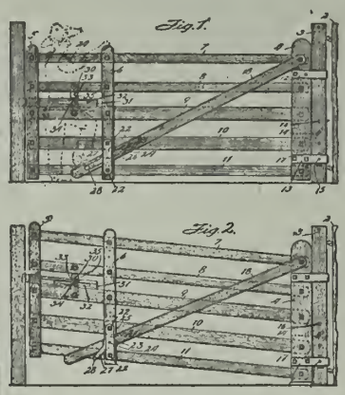
—CLIFFORD TREMBLY.

To clean hearth rugs, mats, etc., rub a little naphtha soap on a clean scrubbing brush. Go all over the mat, scrubbing a little piece at a time. Then wash all the soap off with a linen cloth wrung out of cold water. Go over it once more with a linen cloth wrung out of strong vinegar and cold water. The mat will look equal to new if cleaned in this way.—MATILDA SPAITS, Concord, Cal.

In making my own comforters I always sew the cotton or wool in cheesecloth first, basting it quite often, the long and the square way, and then I cover it with any desired material, just tacking it once in a while. When the covering gets soiled or faded it can be taken off and changed with hardly any work, and the wool or cotton will stay undisturbed. This is also a good way to make children's comforters.—MRS. A. BOEGER, Box 53, Cupertino, Santa Clara County, Cal.

A Gate for Every Farm

"Hillside or Plain"



The "Twentieth Century" farm gate is the gate you should have on your farm. Never "sags" or comes apart and can be installed on any kind of land or in any place. It is adjustable and works on a hillside or in a hollow as well as on level ground. Can be adjusted so chickens, pigs, etc., can pass underneath while the larger animals will remain in the enclosure. The cost is hardly more than that of the ordinary gate.

Write for prices to-day—NOW—and full particulars about this

"Patent Adjustable Farm Gate"

Address
W. R. EATON,
JACKSON, MICHIGAN
Desk GIC.

Put Your Boy in Overalls

Let him play outdoors with his playmates. Let him romp and play. No need to tell him to be careful of his clothes.

Get Him Two-Horse Brand Overalls

The kind that can't possibly be ripped, that are constructed for absolute comfort and freedom of motion. Even if they do get soiled they are easily washed.

A New Pair **FREE** If They Rip

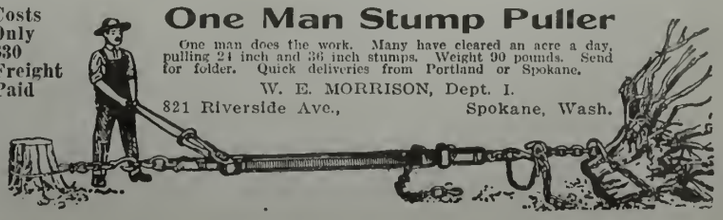
Made By
LEVI STRAUSS & CO., San Francisco

Costs Only $30 Freight Paid

One Man Stump Puller

One man does the work. Many have cleared an acre a day, pulling 24 inch and 36 inch stumps. Weight 90 pounds. Send for folder. Quick deliveries from Portland or Spokane.

W. E. MORRISON, Dept. I.
821 Riverside Ave., Spokane, Wash.



Some Hot Weather Helps

Contributed by Our Readers

A Cool House.

My rooms are never hot in the summer time and this is how I manage it. I arise early in the morning and open all doors and windows. Of course the latter are open all night, but the morning air freshens and cools the house. When the sun begins to get warm I close doors and windows and pull the shades to darken every room that we are not using, and even those as much as possible. In the evening all is opened again. When my husband comes home for lunch he says it is like coming into a cold vault. I often wonder when I go into some houses at mid-day and the hot sun and wind is pouring in through open doors and windows how they endure it. It is a relief to get home to my cool rooms.—MRS. GEORGE ADELLE, Great Falls, Mont.

An at Home Vacation.

Many mothers of young children cannot afford the time or money for a summer vacation, and when the very hot weather comes try the following plan: Buy all bread and cake and anything that will help to feed the family without too many fires. Do no washing and ironing for two weeks, get a pile of sand, place in the shade, dress the children in rompers and overalls and let them go barefoot or wear sandals. Purchase a few late magazines and hang a hammock under the trees or on the porch, and try and serve cold suppers of salads, bread and butter or crackers, fruits, milk or iced tea, and rest and read for two weeks. At the end of two weeks the work of cleaning house will seem as nothing, as you will have gained much extra energy.—FRANCES JOSEPH, Quincy, Cal.

Flower Pot as Cooler.

Buttermilk, even meat, can be kept fresh 24 hours by using a large flower pot for a refrigerator. Select one with a large hole in the bottom and have a cover also with a hole in it. Wrap the pot in a heavy wet cloth and set in a shady, open window, having it slightly raised so that the air can circulate through the holes. This is especially convenient when out camping where ice is not obtainable.—ELIZABETH DICKINSON, Great Falls, Mont.

To Keep the Kitchen Cool.

Have the screens placed in the upper half of the windows instead of the lower. This allows the heated upper air to escape and gives better ventilation. This may also save much work, as the sash curtains do not become soiled by blowing against the screen.—MRS. C. R. FIELD, San Jose, Cal.

Ice Without Refrigerator.

Ice may be kept perfectly by placing it in a box nearly filled with sawdust. Cover top with several thicknesses of newspaper, then with burlap. I have kept a good sized piece for several days and used as required.—E. S. DENNER, Santa Rosa, Cal.

Hammock Comfort.

If you want solid comfort this summer, hang your hammock under the trees, then place another old hammock or piece of canvas, stretched out flat three or four feet above it. Sew on the "upper berth" mosquito netting, letting it hang to the ground. The ends of the netting may be held together with hatpins. Safe behind the screen, flies and mosquitoes will not bother you.—MRS. ALFRED L. BATY, Cedarville, Cal.

Quick Salad Dressing.

A salad dressing that can be quickly made, and is especially available when a hot day turns the milk sour, is prepared by taking the required quantity of thick sour cream and seasoning to taste with salt, pepper, sugar and mustard, with a very little vinegar, if desired. Exact proportions cannot be given, as they depend on the amount of cream available or desired, as well as individual taste, as some like more sugar, etc., than others. Mix well together and it is ready for use, as it requires no cooking. It is fine as a dressing for lettuce alone, or for what I call spring salad, made of lettuce combined with crisp young onions and radishes sliced fine. It is also good on potato salad, where just enough for one meal is prepared.—CAROLINE W. McKINLAY, Salem, Ore.

Table Talk

If, at table, you should cough
Till your head comes almost off,
I have sometimes heard it said,
You might turn away your head
Without being thought ill-bred.

"Please" is not considered rude
When you pass your plate for food,
And it very seldom ranks
With the most ill-mannered pranks
If you take it back with "Thanks."

You are not compelled to take
Over half the jelly cake,
And because the pie's refused
Do not fear to be abused;
Force is very seldom used.

Should your father or your mother
Venture to address each other,
Though you feel you might complain
It will not be thought profane
If you manage to refrain.

If you've work or play to do,
You might leave when you are through.
But "Excuse me," when one rises
Seldom shocks or scandalizes
Or occasions pained surprises.

Manners are of no avail
To keep any one in jail.
True politeness, calm and quiet,
Very rarely causes riot.
If you doubt me, children, try it.
—Edmund Vance Cook.

Table Manners

There is no mark of breeding so distinctive as good manners at the table. You may dress up to the latest fashion, carry your clothes as if born to them, stand the test of almost any trying position and come to grief at the table, simply because eating and drinking are ungraceful acts at their best and therefore we give below ten of the most importants "do nots" for every day living.

First—Do not come to the table with dirt in your finger nails. It is just as bad as to come with dirt on your face.

Second—Do not put your napkin in your collar, you are too old for bibs.

Third—Do not eat your soup from the point end of the spoon but from the side, whether a regular soup spoon is used or a tablespoon.

Fourth—Do not put your elbows on the table.

Fifth—Do not put off until tomorrow what you can chew to-day, and chew quietly and slowly.

Sixth—Do not cut your lettuce with a knife, but use your fork. Practice will soon make this easy.

Seventh—Do not butter a whole slice of bread at one time, and never cut the slice with your knife but break it off with your hands.

Eighth—Do not leave your knife and fork on the tablecloth or resting on the plate, but slanting across the table, both in the same direction.

Ninth—Do not scrape your plate with anything, just let it alone.

Tenth—Do not leave the spoon in your coffee while drinking, but lay it quietly on the side in the saucer.

Don't let the children be annoyed by having the buttonholes tear out and the bands rip off of their underwear. Stitch twice around each buttonhole with the sewing machine, using stout thread and a short stitch, and stitch entirely around each band. —MRS. S. E. GROSS, 132 S. 10th st., San Jose, Cal.

No Other Like It In the World!

If you alight from the train at Durham, N. C., the first thing you note is the delightful aroma and sweet fragrance which hangs over the whole town. This proceeds from the "Bull" Durham factory. Never was there so distinctive and lingering a flavor as that of "Bull" Durham; there is no other like it in the world.

"Bull" Durham smokers notice this, the moment they roll a cigarette and light it. The smoke has a delicious, relishable aroma that is wholly unique and individual. You get it in no other tobacco. It is produced by a generations-old process known only to the makers of "Bull" Durham.

GENUINE
"BULL" DURHAM
SMOKING TOBACCO
(Enough for forty hand-made cigarettes in each 5c sack)

"Bull" Durham has been the standard smoking tobacco of the world for three generations. "Bull" Durham hand-made cigarettes are a *distinctive* form of tobacco enjoyment. Their *flavor* and *freshness* are delightful. Get "the Makings" today and "roll your own."

Ask for FREE book of "papers" with each 5c sack

An illustrated booklet, showing how to "Roll Your Own," and a book of cigarette papers, will both be mailed free, to any address in U. S. on postal request. Address "Bull" Durham, Durham, N. C., Room 1100.

FREE

THE AMERICAN TOBACCO COMPANY

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of August 24, 1912, of

ORCHARD AND FARM

published monthly at San Francisco, California, for April 1, 1914.

Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Managing Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Business Manager, D. W. Hill, 1761 Grove street, San Francisco, Cal. Publisher, Country Life Publishing Company, San Francisco. Owner, Examiner Printing Company, Hearst Building, San Francisco, Cal. Hartley F. Peart, Attorney-Trustee, Hibernia Bank Building, San Francisco. Known bondholders, mortgagees, and other security holders, 1 [illegible] per cent or more of total amount of bonds, mortgages, or other securities, none.

D. W. HILL.

Sworn and subscribed before me this 7th day April, 1914.

[Seal] A. J. HENRY

Notary Public in and for the City and County of San Francisco, State of California, 656 Market st.

OPENING SALE

Brentwood Irrigated Farms

"Best in the West"

Balfour, Guthrie & Co. announce the opening sale of **Brentwood Irrigated Farms.** This choice property is a part of the celebrated Rancho Los Meganos in Eastern Contra Costa County, east of Mt. Diablo.

The Soil is a sedimentary deposit of great depth and fertility. Large crops of staple cereals have been produced on these lands for half a century and the entire section is celebrated for the excellence of its products.

Water A complete irrigation system embodying the best results of modern engineering skill has been installed, making possible the highest type of cultivation. The land will own the water.

The Climate is excellent—no intense heat and no extreme cold.

Products Practically all crops can be raised here on a commercial scale. Alfalfa, dairying, hogs, chickens, fruits and nuts will bring handsome returns.

Markets The communities of the San Francisco Bay Region embracing about a million people furnish a good and growing market for the products of Brentwood Irrigated Farms.

Transportation The Southern Pacific main line runs through Brentwood Irrigated Farms; the Santa Fe is about five miles distant, and water transportation is available about four miles from the east line of the property.

Price $300 an acre with water right. Write for illustrated folder containing terms of payment, maps, etc.

BALFOUR, GUTHRIE & CO.

350 California Street, San Francisco
826 Higgins Bldg., Los Angeles

H. BURNESS	J. D. WOOD	E. F. FORTUNE	A. BURNESS
Petterson Block	Merced	34 W. Weber Ave.	Resident Agent
Fresno, Cal.	Calif.	Stockton	Brentwood, Cal.

Friedman, The Man Who Makes Homes For Millions

We Trust You Privately
Your Honesty Is Our Security

30 Days Free Trial
No Collectors—No Red Tape

See how easy it is

to furnish your home. The following table will tell you exactly your payments on any order from $5 up:

Amount of Order.	1st Payment.	Mo. Payment.
$ 5.00 to $ 6.24	$ .75	$ .50
6.25 to 7.49	1.25	.65
7.50 to 8.74	1.25	.75
8.75 to 9.99	1.50	.75
10.00 to 12.49	1.50	.75
12.50 to 14.99	2.25	1.00
15.00 to 17.49	2.25	1.00
17.50 to 19.99	3.00	1.25
20.00 to 22.49	3.00	1.50
22.50 to 25.99	3.75	1.75
26.00 to 30.99	4.50	2.00
31.00 to 35.99	5.25	2.50

FOR HIGHER AMOUNTS SEE CATALOG.

SEND FOR FREE BOOK

The Great Convenience of the Friedman Credit System When you send for this big free bargain book you are bringing the Biggest Furniture Store on the Pacific Coast into your home. You make selections at leisure and consult with your family as to what you most wish. Having this book in your possession means that you don't have the trouble of going into a store and buying and perhaps have a salesman try to force you to buy something you don't want.

Friedman Saves You Money

Remember that you pay less for furniture bought from us than you would at any cash store in your own town. We control the output of many large furniture factories. We buy our material direct and we sell direct. There are no wholesaler's profits, no retailer's profits, no salesmen. We sell direct to you and we offer you the largest selection to be found on the Pacific Coast.

SEND FOR FREE BOOK

When we state that we can and do undersell cash stores we mean just that. How can we do it? Simply by using for your benefit our 35 years of buying knowledge and our Millions Dollars' Buying Power.

This Superb "Comfy Reclining" ROCKER

only **75c** a month

You can see for yourself what an elegant rocker this is. It is made of high grade solid golden oak. A large roomy, comfortable, well made rocker, with high, wide back. Upholstered with high grade black Boston leatherette. Seat is made over full steel springs. The rocking foot rest is a feature of this rocker that makes it very comfortable. This rocker is only one of our special bargains. Only $1.25 with order and then 75c per month and we ship you this magnificent rocker—$8.35 in full for this handsome piece.

A BED VALUE THAT DEFIES COMPETITION.

$6.60

SEND US ONLY **50c** and we will ship this massive Iron Bed at once to your home anywhere in the United States on

30 DAYS' FREE TRIAL.

UP-TO-DATE PATTERN.

From this picture you can appreciate what a graceful, artistic design this bed is, but you can never realize how massive and well made it is until you see it on the floor of your own home.

UNUSUALLY MASSIVE.

The posts are TWO INCHES in diameter are perfectly plain, without any dust-catching carving or ornamentation. The head board stands 5 feet high, the foot board is 3 feet 4 inches high.

CHOICE OF COLORS.

The enamel is put on in six different coats, hardened by a special baking process, which makes it everlasting. You can have it either in cream color or gold color or Vernis Martin.

CHOICE OF SIZES.

You can have it in single size 3 feet wide—three-quarter size 4 feet 6 inches wide—or double size, 4 feet 6 inches wide.

On receipt of your name, address and 50 cents we will ship the bed to your home on

THIRTY DAYS' TRIAL.

When you receive it you can compare it with other values—examine it, sleep on it, put it to any test you wish. After you have done all this, you can still wait 30 days before deciding whether you are going to buy it or not. If you are absolutely satisfied with it, pay the balance 75c A MONTH. If you are not pleased, ship it back at our expense.

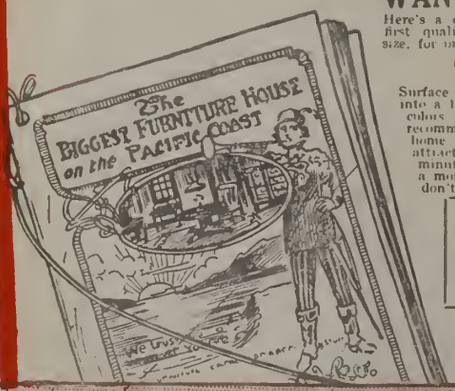
WANT A RUG BARGAIN?

Here's a chance you never had before—to get a first quality Brussels Rug—Standard 9x12 feet size, for only $8.90, or

75c a Month

Surface of selected woolen yarns, closely woven into a beautiful medallion center with blending colors of soft green, red and tan. Highly recommended, guaranteed to wear. If your home would be brightened and made more attractive by a new rug, don't hesitate a minute. Terms $1.00 with order and 75c a month. Money back upon delivery if you don't like it.

REMEMBER that every single article sold by M. FRIEDMAN & CO. is GUARANTEED to be exactly as represented. You run no risk in any respect.



Most Remarkable Extension Table Value

75c a month

Here's just the table you have been looking for at your price. A splendid dining-room table with a 42-inch top—a 6-foot extension and an 8-inch pedestal base. It is made of solid Oregon fir in both golden and fumed finish to suit your taste. Weight 90 lbs. Price has been brought down to $9.90 to make it a "Special." $1.00 with order and 75c a month. You will be delighted with it.

A Surprise Awaits You

Every one of the above mentioned bargains are fully described in our NEW BIG MONEY SAVING ILLUSTRATED CATALOGUE. But they are only a few in a thousand—all of which are described in this great book. You must see it. It is overflowing with surprises. You never have seen such a line of splendid furniture and household goods in your life as you will see displayed in its pages. Most of all the astounding low prices will surprise you. They will show you how to save money and how you can afford to have everything you want.

Friedman's Great Catalog

will interest you more than any story or book you're read for years, and IT'S FREE.

THE FIRST THING FOR YOU TO DO, therefore, right now, is to fill out and send in this coupon tag. The catalogue will arrive almost before you know it. Whether you need anything now or not send for this book of surprises. Your copy is free waiting for you. Get this tag in the next mail.

Write Your Name On This Tag—Mail It Today And We Will Ship You The BIG FREE ILLUSTRATED BARGAIN BOOK

Name _____

Address _____

_____

M. Friedman & Co.
261 Post St.
San Francisco.

FREE Send For This Big Book—Now

M. FRIEDMAN & Co.

261 Post Street,
San Francisco, Cal.

ORCHARD and FARM

HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888
IRRIGATION

STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 7 Published by Country Life Publishing Co. July, 1914 Hearst Building, San Francisco, Cal. 50 Cents a Year

ANNOUNCEMENT

OF THE BEST FARM PAPER ON THE PACIFIC COAST

A Matter of Interest to Every Farmer, Orchardist, Dairyman, Stockman, Poultryman and Landowner on the Pacific Coast

THE NEW SUBSCRIPTION RATE IS 50c a Year or $1.00 for Three Years

IT was only after feeling the pulse of Pacific Coast farmers and an intimate study of rural requirements that the publishers of Orchard and Farm decided on this change in subscription price. The new price is a standardization of the subscription rate of Orchard and Farm on the same basis with other good and proven farm papers in the Middle West and Eastern States, Orchard and Farm is a paper for farmers and producers of things from the soil. Hereafter it will be bigger and better. Other improvements that will contribute to Orchard and Farm's growth and popularity will be added continuously. Its splendid development during the past year will be carried forward with even greater vigor. The aim will be to make and keep Orchard and Farm a paper that any man on a California and Pacific Coast farm or any man interested in agriculture in this region will have to read to keep informed.

Further and more detailed information, special offers, etc., will be given on request by letter or in person.

Made for people who grow things

ORCHARD and FARM
ESTABLISHED 1888
IRRIGATION

Hearst Building,
San Francisco.

LIVESTOCK

BREEDERS AND OWNERS

Orchard and Farm

keeps in close touch with the breeders of pure-bred stock on the Pacific Coast, and it offers you co-operation in your efforts to

Build Up Your Herd

or to dispose of your surplus stock. Write us if you want this co-operation and our knowledge of conditions may prove invaluable to you.

Livestock is the life of the farm. Orchard and Farm gives you advice in every issue on its care and management. Turn to the livestock pages of this issue and note the splendid series of livestock articles—the up-to-date Pacific Coast features that every Western breeder should know. If you want a sample sent to a friend, write for it.

Address

Livestock Department

ORCHARD and FARM

HEARST BUILDING

SAN FRANCISCO

CONTENTS FOR JULY, 1914

	Page
HOW TO GET WATER INTO THE SOIL	1
THE RIGHT TIME TO PICK RAISINS	2
CHERRIES ON THE SACRAMENTO RIVER	2
INTENSIVE BEEF FARMING FOR CALIFORNIA	3
PRUNE HARVESTING AND CURING	4
IRRIGATION METHODS FOR ORANGE TREES	4
CO-OPERATION IN CURED FRUIT MARKETING	5
CROP CONDITIONS ALL OVER CALIFORNIA	6
VALUABLE HINTS ON THE OLIVE	6
FARMING METHODS ON THE SACRAMENTO RIVER	7
ALFALFA A POSSIBLE FERTILIZER	8
A GOOD HOME-MADE LAND LEVELER	8
QUICK WORK IN SOIL BLASTING	9
WAYS OF IMPROVING CITRUS VARIETIES	10
SOIL PRACTICE FOR ALKALI	11
THE FIGHT AGAINST JOHNSON GRASS	11
MENACE OF THE EIGHT-HOUR BILL	12
WALNUT POINTERS AT THE CONVENTION	13

The Mule in History

By Henry Watterson

In war the mule plays with high credit the role of Kipling's Gunga Din. He is ballyragged. He is blasphemed. He is belabored. But he is always on hand when needed, and he is always needed. Motor trucks may serve the caisson in the rear, where roads are hard and smooth, but the mule must be depended upon in the field. In peace he is sportive. His humor is sometimes mistaken for spitefulness when he kicks a well-meaning farmer into a protracted sojourn at a hospital or sends his soul sky winding into the hereafter with his body not far behind.

But when it comes to pulling a load, up hill or on the level, subsisting upon a limited menu, and starving the veterinarian, he puts it all over his handsomer and more aristocratic cousin, the horse. Wherever the footing meets the requirements of an able-bodied goat the mule can go and is willing to tote his load. His hide is tough and weather proof and his expectancy of life is higher than that of a thoroughbred.

Electricity relieved the mule of the task of pulling street cars. Inventive genius has provided an electric substitute for him on the towpath along the Panama canal. The treadmill is now chiefly used as a figure of speech. Where the lay of the land is right more or less plowing is done by tractors. But there is still plenty of work for the mule to do. It is his proud distinction to cast nearly as much as a small automobile. He was perhaps seven thousand years old when the automobile was invented. He is built on the original model. He has the same tendency to backfire that made it risky to start him when Alexander set out across the Ganges, when Hannibal crossed the Alps, when Charles Martel double crossed the Moors, when Washington crossed the Delaware and when a farmer boy tried to cross a swollen creek in the last freshet.

Although he is sometimes infernal, the mule is eternal.

ANSWERS FOR FARM PROBLEMS	14
EDITORIAL	16
CEMENT LINING FOR SEPARATOR HOUSE	17
LIVESTOCK AT THE PANAMA-PACIFIC EXPOSITION	18
HOW THE EXPOSITION WILL HELP CALIFORNIA	19
HOW IOWA BREEDS DRAFT HORSES	20
DESCRIPTION OF WORLD'S RECORD COW	21
CALIFORNIA ASPECTS OF THE BREEDS	22
BUILDING A BERKSHIRE HERD	23
HOG CHOLERA AND SWINE BREEDERS' ASSOCIATION	24
AGRICULTURAL MEETINGS AT THE EXPOSITION	26
THE RIGHT SIZE FOR A SILO	27
ELIMINATION OF UNPRODUCTIVE FOWLS	28
EGG-LAYING CONTEST AT THE EXPOSITION	29
HELP IN MARKETING EGGS	29
REASONS FOR CAPONIZING FOWLS	30
EPISTLES OF AN AUTOMOBILE TO ITS MAKER	31
THE HOUSEHOLD EXCHANGE	32
QUEER THINGS ABOUT QUEER FISH	33
USEFUL AND UP-TO-DATE PATTERNS	34
THE BIRD THAT TOLD ITS NAME	35
WHAT SILK WORMS WILL DO	36

FISH

Meat Meal for Poultry

We guarantee:

1 —Better egg results than from any brand of "beef scraps."
2 —Positively no fish flavor in eggs or meat of birds fed on it
3 —None of the digestive troubles that many "beef scraps" cause
4 —Lower mortality among hens fed to force a high egg production.
5 —Baby chicks thrive on it; they don't die, as they often do on "beef scraps."

PETALUMA

bought 500,000 lbs. inside of six months and is now buying 100,000 lbs. monthly.

"Pacific Pioneer"

(Reg'd Trade Mark)

Write for free sample prices and feeding test reports.

Western Tallow Co.

Dept. M, 40 Beale St.

San Francisco, - - - - - Cal.

Orchard and Farm

BRINGS RESULTS

The experience of one of our Classified Advertisers, told in his letter below, may help others who have something to sell.

ORCHARD AND FARM,
San Francisco, Cal.

Gentlemen—Our small ad in the classified department surely is bringing us results, and we find it one of the best advertising mediums on the Coast.

Yours for success,
CALDWELL BROS.
Los Angeles County.

Write us for costs, etc., or ask for suggestions as to how you can advertise cheapest and most effectively in Orchard and Farm.

Address

Advertising Department

ORCHARD and FARM

HEARST BUILDING

San Francisco

ORCHARD AND FARM

IRRIGATION

Vol. XXVI JULY, 1914 No. 7

How to Get Water Into the Soil

The problems of irrigation are any. One that is the most fundaental of all, though more often igbred than thought of, is the penetraon of irrigation water into the soil. is amazing how little thought or vestigation is given this matter by e large majority of farmers. It ould seem the most natural thing the world to investigate to see how eep irrigation water goes into the il, but not one man in a hundred tually finds out about it. As a matr of fact few people, especially with mping plants, have much idea about e depth of water they put on, but at would not matter if they knew w deep the water went, for then ey would be sure to put on enough d not too much.

Of course, there is a difference beween sandy soils and heavy soils, r irrigation water is likely to e lost by seepage in sandy soils, hile in heavy soils it is much more robable that the water does not go alf as deep as the irrigator expects, r anywhere near as deep as it hould.

Even in sandy soils moisture penetation often is less than expected, s was shown by the experience of e of the most successful peach en of Selma. Ground water stood at 3 feet, the district being sandy and rigated from canals. Being a good rmer, he decided that the roots ere not getting sufficient moisture, nd as canal water ran short early in e summer, he installed a pumping lant and gave the trees what he hought was a good drink. Having profitable curiosity, he dug down nd found the soil moist about 2½ et, according to our memory of the se, so gave them another big irriation, with results entirely satisctory.

Clearly in heavy soils, where water aturally sinks in much more slowly, onditions would be very much worse han this. People flood hard land, tting the water stand for perhaps 4 to 48 hours and feel highly pleased ith the good work, not knowing at the water might not have sunk own more than eight inches or a ot. Where furrows become silted is about as bad, as clay and silt is sed on irrigating canals just to preent loss of water by seepage.

Factors Affecting Penetration.

The depth that water will sink into e soil depends upon a number of ings. Naturally light soil will take ater better than naturally heavy soil, hich is the one rule most apparent everybody.

A good supply of humus or vegeable matter in the soil is another ing of prime importance, for water ill sink into soil containing lots of egetable matter far quicker and better than into a dead soil. The reaons for this given in detail would carly fill a paper, but the fact is so pparent when a person stops to ink of it that there is no need to ay much more about it.

The fact, however, is of prime ractical importance, developing as ig a demand for manure, cover rops, tree prunings and other forms of organic matter as can be supplied. Common cultivation methods particularly develop this demand by destroying humus more on irrigated soils in certain respects than on dry-farmed soils, provided the latter have fair amounts of rainfall.

Concrete Irrigating System on Rich Glenn County Land.

Continual cultivation kills the humus on top. We irrigate and then we have to cultivate, stirring the top four inches or so thoroughly, breaking it into small particles, letting the sun strike it fairly, drying it out and heating it up. The cultivation is a necessity under the conditions and should be encouraged rather than discouraged, unless perhaps a straw mulch or a cover crop can be provided, but nevertheless it wears out the humus and consequently increases the difficulty with which water penetrates.

These stirred soil particles, losing the protecting power of the humus, change in physical characteristics and certain cementing material either prevents the water from sinking down, or washes down a few inches itself and forms the impervious plow sole or irrigation hardpan, found both on irrigation orchards and grain farms, the process of formation being approximately the same whether formed by irrigation or without it.

A leading factor in making plowsole, whatever way it is formed, is the lack of vegetable matter in the soil. Where a good supply of manure is applied or natural vegetation abundant such conditions are less likely to occur.

How This Is Overcome.

That such conditions are overcome by getting vegetable matter into the soil is easily seen. One of the leading citrus growers of Southern California two years ago thought he would use more manure and work it in better, so he gave his grove a heavy application of manure and worked it in with a spading harrow, which is a disc harrow with long blades. Following this it took the water just twice as long to reach the end of the furrow as it did before, for the water sank in deeper, quicker and better.

Another most effective way of remedying such conditions, when possible, is growing alfalfa or other deep-rooted plants. This serves two purposes. First, it adds vegetable matter; second, the roots make channels into the soil which the water can follow down easily. It is common knowledge that on heavy soil water sinks into alfalfa very much quicker when the alfalfa is well established than before the alfalfa was planted. One cannot, of course, grow alfalfa in orchards unless the irrigation supplies are sufficient for both the alfalfa and the trees, but where water is sufficient for both a number of leading citrus growers are coming to believe that in growing alfalfa lies the solution of the problem of having a plentiful supply of humus in the soil and getting the water down properly. Anything that will supply lots of vegetable matter through the soil is highly beneficial in many ways.

Subsoiling and Adobe Cracks.

Subsoiling is another method by which the soil is helped a great deal, and irrigation water sinks in nicely. The subsoiler cracks the soil some distance from it, not only making a path for the water its own width, but leaving cracks extending out from it, being good in other ways than breaking up the plowsole. In fact, subsoiling is highly advantageous in both orchard and old grain field. It should be much more commonly practiced and is becoming more popular every year. It is particularly beneficial on heavy alfalfa land that has been pastured, being superior to the ordinary surface cultivation, which is a fine thing itself.

An interesting comparison comes in between subsoiling and the heavy cracks in adobe. The tenderfoot sees the adobe cracks and hugs himself to think of the ease with which water will penetrate. It surely runs through the cracks, but you dig down into hard adobe after water has been standing for a full day and there will be dry soil four inches down, unless the adobe was well cultivated, well supplied with vegetable matter, or slightly damp before irrigation, for water will sink into slightly moist soil much quicker than into bone-dry soil. In exactly similar fashion the water follows the cracks, but don't get more than a couple of inches from them, and the land after irrigation has a surface of wet soil, streaks of wet soil through it, and the rest is about as dry as ever. Understand, however, that with good tilth, subsoiling, plenty vegetable matter, or where there is a good stand of alfalfa or such crop, the water will sink in properly, and heavy soil is rich, durable and deservedly well thought of. The idea is simply to get vegetable matter into it and to use other means to see that the water sinks down.

Dry Top—Dry Subsoil.

There are two unfortunate conditions that may develop on irrigated land with too little irrigation. One is where the top soil has dried out until the trees or plants get no good

(Continued on Page Two).

The Right Time to Pick Raisins

It seemed to the department of viticulture at the University of California some time ago a peculiar thing that despite the great importance of our raisin industry, nothing had ever been done to determine just the stage of ripeness at which raisin grapes (Muscats) ought to be picked in order to give the best results. Therefore Prof. Frederick T. Bioletti, head of the department, conducted some systematic work on this matter with results that should be of extreme interest and high value to every grower of raisin grapes in California.

The method of conducting the work was as follows: Rows of vines were taken in a vineyard as uniform as possible in nature and production, so that different results from different parts of the experiment would be due as much as possible to the experiment itself, not to any variation in the vines. From these rows the grapes were picked at different times, approximately one week apart through the raisin season, the grapes being weighed, also the raisins, and the quality of the latter judged by experts at the end of the season.

Picking was done as early as the grapes were ready to make raisins of passable quality, and continued as long as was considered possible, the regular picking for the raisin district commencing later than the experiment started and being completed quite a bit before the last picking in the experiment was over.

As was seen from the following table, the amount of raisins secured from different pickings increased continually from start to finish, that is, the later the picking, the greater the weight of raisins secured. Likewise it can be seen that the later the picking, the greater amount of sugar, though the weight increased even more than the sugar did. The grapes also can be seen to have dried down very much heavier toward the end than toward the beginning of the experiment, the first picking particularly resulting in a heavy loss of weight. While the quality of the late picked raisins was superior to the early raisins, that of those made in the middle of the season was best of all, though there is a qualification to this. The gross income was greater for the latest picking than for any others, and the net income also, which is the thing that counts with the individual.

An important matter to be considered is the length of the drying season, as rains become more probable the later the season becomes, and as it takes very much more time to dry grapes late in the fall than early, the grape grower runs a risk by holding his grapes on the vines as long as he might want to do considering the weight of raisins secured. However there is this about it, the gain in weight is so much that it would pay the grower, according to Prof. Bioletti's statement at the Fruit Growers' convention, where these results were made public, to build a drying plant for emergencies. It would not always have to be used, and likewise exceptionally early rains might make it highly desirable even with ordinary picking.

Another excellent thing about late picking is that it would give the grower a much longer season than he is accustomed to and he could run with a smaller crew of men. It would not be necessary to pick all late, but a crew of pickers could start about the time that picking now is at its height or still later, for grapes then would make a big tonnage and the quality would be good.

Prof. Bioletti states that the time for picking the greater part of the raisins under present methods is between what was the second and third picking in the experiments. Although calendar dates are given, this reference is more to the quality of the raisins rather than any exact date, for what is the right condition of picking one season may be a little too early or a little too late another.

The quick curing of the early picked grapes was evidently due to two things, one the greater temperatures of the early season which would naturally make quick drying; the other the smaller percentage of sugar, for the greater amount of sugar, the slower drying would normally be. The much greater amount that late raisins dried down was probably due to drying slightly on the vines, though the weight of raisins secured shows conclusively that there was an important clear gain in weight. As can be seen, raisins picked early dried down more than 4 to 1, while late picked raisins dried down as little as 3 to 1. It shows that the ordinary estimate of raisin drying is too high.

Although long curing makes somewhat more labor than quick curing, the extra labor is more than compensated for by the substantial increase in weight. It cost, for example, 2.8 cents per pound to produce the first picked raisins, including interest, taxes, all vineyard work, etc. The cost decreased continually to about 2.4 cents for mid season raisins, and to only 2.2 cents a pound for the late picked raisins. The gross returns, figured on an acre basis, like all the experiment, was $72.74 for early picked raisins, but $110.40 for late picked, more than half as much again. Net returns advanced from $31.65 per acre to $61.80 per acre, nearly twice as much.

Quality was determined by taking the raisins to a number of experts in handling commercial raisins, without telling them anything about the method of production. Each judged each lot of raisins as compared with what he thought was perfection and the different opinions averaged up with the results shown. The lot scoring 98 plus represented the standard raisin of the present day at its best. Many raisins are picked at approximately the same stage of ripeness as these, which possibly influenced the judgment of the experts slightly, the raisins naturally being typical of the best found on the market. Perhaps if the average picking was a little later, the standard would change so that they would like the later raisin best.

A striking feature of the experiment was that the raisins were also submitted to a number of individuals to find the desirability from a table standpoint. After testing these raisins, all without exception voiced their approval of the latest picked raisins and went down without a break in order of picking to care least for the earliest picked lot. Although in commercial quality the late raisins fell below the mid-season raisins, as seen from the table, it is interesting to know that some packers favored the latest picked raisins, thus indicating a high commercial merit provided the trade was educated to the change. The gain in eating quality, accompanying good gain in weight and a commercial quality that would be very welcome to the trade in the course of time opens very favorable opportunities for improvement.

One thing is shown conclusively, that early picking means a big loss in weight and a big loss in quality. Building a drier should be a fine insurance and be paid for rapidly, and in the ordinary course of events later drying should be attempted.

	August			Sept.	
Time picked..	15	23	30	8	26
Days drying..	13	14	17	21	26
Sugar pct.....	21	23.9	25.5	26.8	28.8
Pounds grapes	6,906	7,471	6,780	6,840	7,176
Pounds raisins	1,664	1,960	2,000	2,200	2,372
Ratio	4.15	3.80	3.39	3.11	3.00
Quality	87.5	92.5	98.8	97.5	98.1
Cost	2.8	2.5	2.4	2.3	2.2
Gross returns.	$72.74	$91.23	$98.80	$107.25	$110.40
Net returns..	$31.36	$45.62	$51.38	$57.92	$61.80

Cherries on the Sacramento River

Although the cherry orchards of the Sacramento river are not widely known, the cherry crop is one of the earliest, sometimes the earliest, of California and the orchards are very profitable.

The first full box of cherries shipped out of the State this year was grown by E. A. Gammon of Hood, Sacramento county, who has the distinction of having shipped out the earliest cherries several years. This box was shipped April 9 and was sold in Philadelphia for $50. The second box brought $45, the third $30, and so on down to $10, after which prices dropped to a moderate figure. Shipping continued until the middle of May.

A notable fact about cherry growing on this part of the Sacramento river is that all the cherry orchards are extremely small, averaging little over an acre in extent. The small size is due to the difficulty of finding just the right location, also to the great amount of labor required in harvesting the crop. Mr. Gammon, for example, on his acre and a half orchard has kept 50 pickers busy at one time.

The trees are mostly located close to the levees on deep loam with a fair depth to ground water. When necessary they are irrigated from the river, thus not suffering from drouth, and this year are no more troubled from die back than in normal years, while most cherry orchards elsewhere have been hard hit.

The cherries, especially early in the season, run rather small, but the quality is excellent and the price such as to justify the planting of cherries wherever suitable locations can be found.

The accompanying illustration, though showing an orchard much farther up the river, close to Yuba City in fact, indicates the vigor and health of river orchards. It was taken on March 19, 1914. It would be hard to find a finer looking orchard. It is also hard to find any any orchard paying like a good cherry orchard.

Giblin Brothers' Cherry Orchard at Yuba City This Spring.

GETTING WATER INTO SOIL

(Continued from Page One).

from it, life being sustained by the deep roots going down into clay that is always moist, or into deep subsoil of any kind. The other is where the ground has dried out all the way down, but the irrigator is very happy on account of a top foot or so of moist soil, not thinking of conditions further down.

Take the first condition, a dry top soil, when possibly the trees are green and do not appear to be suffering from moisture. The greatest number of feeding roots are usually in the top four or five feet, though other roots will go much deeper. By digging a hole it will be found often that some roots go away down, though they are few.

Clearly when the top five feet lack moisture the roots therein can do nothing to feed the tree. At the same time the deep roots pull up moisture from below, keeping the tree green and apparently thrifty. The owner sees the green leaves and is contented, though actually the tree is only holding its own and is getting very little plant food and gaining little strength for new buds.

Moisture in the top four or five feet would send up both food and moisture and the tree would have actually just that much more time for growth. The fact deserves to be driven into every fruit grower's mind that he is missing just that much of the season when he lets his top soil dry out and the subsoil supply the moisture to keep the tree green.

For the latter condition of moisture on top and none below little can be said. For one thing, more moisture is lost by evaporation. The roots are drawn to the surface rather than being distributed through a greater depth, where they would have more plant food and be better able to resist drouth. Always the irrigator should attempt to make connection between top and bottom moisture for once the connection is made it continues, supplying the trees with more moisture and giving the roots all the soil to feed in.

The above is just a short outline of a big subject. If anything should be emphasized it is the necessity for knowing just how far irrigation water does go and the condition of the soil before irrigation, too. To get the water down, good tillage, good irrigation methods and lots of vegetable matter are required.

To get water into the soil you must have the surface of the ground in good condition when the rains come

Intensive Beef Farming for California

By W. M. Carruthers

The production of beef to satisfy present demand seems to be the stion uppermost with the men o are looking to agricultural pur-s as a business. There are several sons for this change from the sent methods of farming. Farmers beginning to realize that beef be raised at a profit on high-ced land. Lack of profit is chang-farmers from their present thod of farming. Until late years ever had been the custom for the rage farmer to keep any books, since the advent of the State col-es, the extension service of the ernment and the better farm iodical, many have been led to e up these more business-like thods with the result that they nd out that they were not getting much from their farms as they e putting in, if their own work s counted.

Agricultural scientists have of re-t years been giving great study to rying and have so revolutionized whole industry that a far higher ndard of dairy methods than ever ore is now needed if full success to be made. This is due to the ater cleanliness demanded and the re kinds of inspection required and higher education needed to pro-e a product which can compete orably with the other dairy ducts on the market.

Dairying at its best is run at a ge expense and while a greater in-e is received than when beef is sed, a greater per cent of it is orbed by the necessary running enses. The cattle require more e; there are more demands for the erinary; and on the whole it seems t there is more disease. Then re is the marketing of the dairy duct, so that, when all is summed unless a man has an exceptionally herd or is particularly efficient in methods his profits are small at best of it.

These few remarks regarding dairy-are not made to discourage the iness, far from it. This article is ng written for the purpose of wing that if science had advanced production of beef as much as it dairying, the former would be a fitable business without the many dships and trials that the dairy-n has to encounter. The one is a e to his work throughout the en-year, the other is practically e.

Blood is the demonstrated essential profitable feeding cattle and is to-estimated in the steer at a tangi-dollars and cents' value, so that eders of feeding stock add from to ten dollars per head to the ue of their calf crop by the use of istered bulls. It has been proven t for the production of prime beef the earliest age the pure-bred bul-k surpasses all others. If it be the der's purpose to produce profitably ripe 1,200-pound steer at eighteen nths or a ripe 1,500-pound steer at o years, the pure bred for this pur-se is unequaled. There is not a ughtcrer in this country whose timony is worth having who will t testify to the superiority of pure-d beef when ripened between the es of twelve and thirty months.

The consumer is constantly de-nding a better grade of beef. This ans a carcass from which can be t a great deal of really excellent at besides ribs and loin. With ch a stimulant as an overwhelming mand for something good, it is ly natural that the whole impulse production should be to meet that mand and the only means is to get near pure breds as possible.

The following illustration demon-rates this fact: The Armour pack-ing house in Chicago gave the kill on a steer carcass which had not been registered, but came out of a bunch that were practically pure bred; also on a native medium grade of a fair quality of beef. The pure-bred steer cost $5.75 per hundred, live weight; age about 20 months; weight, 1,250 pounds; 762 pounds dressed, or 61 per cent; fat yield, 8 7-10 per cent. The grade cost $5.30 per hundred, live weight; age, about 28 months; live weight, 1,150 pounds; dressed weight, 667 pounds, or 58 per cent; fat yield, 7 per cent. The important point of advantage was that the animal 20 months old made 100 pounds more than the animal 28 months old and brought 45 cents per hundred more.

Prize Winning Steer That Sold for 50 Cents a Pound.

From the butcher's standpoint the pure-bred steer will cut to better advantage, and it goes without saying that the consumer will be better pleased.

Grand Champion Carload Steers at Portland Union Stock Yards.

The reasons why we shall never again experience the glut of over-production of cattle in this country are very obvious. Much of the short grass country that was deemed available for cattle raising has proven utterly profitless for the purpose. The farmer has occupied every useful valley and is absorbing the water courses for irrigation. Not satisfied with fencing all the lands really available for farming, he has stuck his plow into sods of thousands of acres of arid land which have starved him out, only to leave desolation behind in a growth of weeds that nature alone by years of persistent effort can clothe again with grass that will sustain the herd and flock.

The growth of consumption has overtaken production. Home and export demands for meats are increasing and increasing.

How can California help meet the increasing demand for meat? It is plain to thoughtful minds that this can be done by making two blades of grass grow where one grew before. The permanent policy of livestock in intensified beef farming will prove one of the most economical and effective methods of increasing the fertility of the soil and to-day presents opportunities for intelligent men to acquire affluence not equaled by any other occupation for safety and minimum of capital required.

To produce two pounds of beef where one was produced before, under conditions now securely established in California (such as irrigation, alfalfa, ensilage, barley and corn), we are forced to come to the use of pure-bred beef cattle. Likewise we are compelled to use the blood of our improved beef breeds to improve the quality and enhance the value of beef. Under existing matter-of-fact conditions, the pure-bred beef bull of to-day is numerous enough to be within the reach of all who are worthy to own his precious blood. Under like treatment he costs no more to raise than other cattle, and the growing demand for improvement makes him as staple an article of trade as a feeding steer. There are small beef raisers to-day whose simple methods of keeping and raising will allow them to pay $200 for an unrecorded pure-bred beef cow; sell the calf at $50, and then beat the profits of any ordinary mercantile business in the average country town. The higher prices readily obtained for animals more carefully and expensively reared readily tend to better methods and yield better profits.

It should be the ambition of every beef breeder in California who is raising beef on high-priced lands to grow pure-bred steers, as they can be grown just as cheaply as poor grades. The female progeny of a single pure-bred cow saved to replace common sorts will, in an incredibly short series of years, stock a good-sized farm. The female increase of a car-load of pure-bred cows would in twenty years overrun the capacity of a very large ranch. It is not necessary to register pure-bred stock for steer purposes, and a herd so established on generations of pure-blood will surpass any grade.

Each breeder and feeder of pure-bred steers should try and build up his own territory. He who makes a convert to the use of pure-bred blood and places it in new hands is not only a benefactor to the production of good beef, but is a public benefactor. The successful intensified beef raisers are those who breed, feed and finish the cattle on their own farms. The expenses are heavy when breeders sell their feeders before they are finished. The hand is in the pocket all the time for something. The permanency of this wide movement for the improvement of early maturing high-class steers to meet the ever-increasing demand in our State depends a great deal upon the way each breeder and feeder works his own territory along community lines. It may be that community breeding must eventually solve this problem so the consumer can actually see his beef raised, fed and killed, or at least see the farm on which this is done and personally know the owner. He will then gladly pay a few cents more than market price for a good product when he realizes just what his neighbor has, a price which is as good for the best quoted on the Chicago market.

In a future article the pure-bred steer will be discussed along practical lines from the day of his birth until he reaches the block.

SWINE BREEDERS' MEETING.

The California Swine Breeders' Association at its annual convention at the University Farm this month elected the following officers: President, A. M. Henry, Farmington; vice-president, J. K. Fraser, Denair; secretary-treasurer, Prof. J. I. Thompson, University Farm; directors: C. B. Cunningham, Mills; H. G. Armstrong, Woodland; George Murphy, Perkins; Charles N. O'Dell, Modesto.

The association asked the State Agricultural Society to give 10 prizes on hogs raised by California boys in the Pig Raising Contests being started by the University Extension of the College of Agriculture. It also asked for a number of improvements at the State Fair and indorsed the bond issue to be voted on in November. The breed associations of the country were also urged to exhibit view herds at the Panama Exposition next year.

Prune Harvesting and Curing

By Fred Millard, Sec'y Farmers' Union, Cal. Division

The conditions governing the harvesting and curing of the prune crop of California vary according to the locality. In this article we will consider only the conditions prevailing in the Santa Clara Valley, and the variety of prune known as the French prune.

The harvesting season begins about August 10, and under favorable conditions the work is completed about September 20. In the foothill sections the work commences about one week or ten days ahead, and in the mountains about the same length of time later than the above-mentioned dates.

Experience has taught the growers that prunes should be allowed to fully ripen, and drop from the trees instead of being picked or shaken down, as they then contain the greatest amount of sugar, and consequently the shrinkage in curing is less.

During the heaviest falling period the best results are obtained by going over the ground and picking up the fruit twice a week. This, of course, in the case of a large orchard, or scarcity of help, is impossible, but whenever possible, it has been found that a better quality of fruit is obtained, for if allowed to remain on the ground too long, the hot sun will burn the fruit on one side and make the skin tough and hard to cut.

As soon as possible after being picked, the prunes are hauled to the dipping tank, where they go through the process of being dipped in a solution of two pounds of 98 per cent lye or caustic soda, to one hundred gallons of water. This solution should be kept constantly boiling to obtain the best results.

Late in the season as the fruit becomes tough, it is necessary to make the solution stronger.

They are immediately thrown from the dipping basket into a tank of rinsing water, or directly into a hopper, from which they are emptied on the trays, and conveyed to the drying ground either with a team and truck or with the small field cars.

The object of this dipping process is to cut the skin and enable the fruit to cure without becoming burned in the sun, which at this time of the year is usually very hot.

After being exposed to the sun for two or three days, the fruit should be stirred on the trays. The best tool for this purpose is the old fashioned wooden rake, made famous by Maud Muller.

When the fruit is about three-fourths dried, it should be stacked up by placing one tray above another, leaving sufficient space for the air to draw through the pile. In this manner the fruit will be properly cured instead of being dried down too hard. The drying of the fruit too hard is to be avoided as well as not sufficient drying, for if it becomes too hard it loses its flavor and becomes unpalatable, and no amount of later processing by the packer will restore it.

The length of time required for this finishing process depends, of course, upon weather conditions. After being taken from the trays the fruit is dumped into bins, where it goes through the sweating process and is then ready to be packed for the market.

A few years ago the majority of growers sold their fruit green to men who made a business of buying and curing it. It has been found that in order to get the best returns from the money invested in their orchards, it is far better to do their own drying, thereby retaining the extra profit made by the driers.

The equipment used in drying when once installed lasts for many years, and consists of a dipper, hopper and shaker, and the necessary number of trays, which will run about twenty-five to one green ton of fruit. Of course, in an ordinary season these trays will be used two or three times during the harvesting period, but as California is noted for unusual seasons it will be well to have some extra trays on hand with which to cover the fruit in case of wet weather.

Prune Dipping and Drying on Millard Ranch, Los Gatos.

The most common type of dipper used in this locality is shown in the accompanying illustration, and costs complete, including hopper and shaker, about $125. This may seem like a large expense to the grower, with but a few tons of fruit to handle, but it is a great factor in saving time and labor, and under present conditions these two items should be seriously considered. If a man is handy with tools, he can easily make his own hopper and shaker, and do all necessary work in setting up the dipping tank, as the firms making this machinery furnish blue prints and details for doing the work.

The illustration also shows the style of trays and cars used. These trays are three feet wide and eight feet long, and are made with sawed redwood shakes and Oregon pine sides and ends. They cost about 40c each in the shook. It costs about 3 cents to make them up.

With the style of dipper shown, three men can easily handle three tons of green fruit in two hours. This includes dipping the fruit and spreading the trays on the drying ground. As shown in the illustration two men usually do the work, but in this instance the good house wife lent her assistance in loading the trays on the cars ready for the dry ground.

The hardest part of the work of harvesting the prune crop is the picking the fruit from the ground. This is done in many cases by families taking the contract and using the whole family, thereby enabling them to lay aside a sufficient amount of money to furnish many of the necessities and some pleasures for the coming winter months. In fact, many of the school children and students in the nearby colleges provide funds for their tuition in this manner.

The enlarged crayon of dad as a young man is not always such as to impress the children with their father's youthful handsomeness.

The man who thinks bad roads are a necessity should think again.

Irrigation Methods for Orange Trees

By W. S. Guilford, Director of Agriculture, S. V. I. C.

(Elsewhere in this issue will be found a statement of the problem of getting water into hard (or heavy) soil. The finishing touch to this is given in the following description of how proper irrigation methods were used on a Sacramento valley citrus grove to restore excellent conditions that improper irrigation had destroyed. This is part of an address delivered by W. S. Guilford, director of agriculture of the Sacramento Valley Irrigation Company, at the Fruit Growers' Convention at Davis.—Editor.)

In our orange grove at Orland—which is on heavy clay soil—in fact, I do not know of any heavier soil in the valley—it had been the practice for years, whenever it was irrigated at all, to flood the land.

After Government water was available three or four years ago it was flooded every 10 days or two weeks and cultivated between irrigations. This practice was gradually breaking down the granular structure of the soil and burning out the humus and vegetable matter and after the first irrigation after we purchased the place in June, 1912, I could find no place in the orchard where it was possible to stick a spade, or even to dig without a pick, over nine inches into the soil.

For the next irrigation we plowed four furrows between the rows, made head ditches and controlled the water into the furrows through lath boxes. The soil was so hard that it was almost impossible to plow the furrows, it being necessary to go through two and three times with the plow before they could be opened up enough to run water in.

Too large a stream was turned in for the first irrigation and the bottoms of the furrows silted over so that the water ran through the 400-foot rows almost as well as though the furrows had been cemented.

They were furrowed out again, a little deeper this time, and a small stream turned in that required 24 to 48 hours to get through the rows, soaking in pretty well as it passed along. Such an extreme measure as this is seldom necessary, but it certainly was in this case, and we kept a small stream running for four or five day periods, cultivating and furrowing out between times nearly all of the summer season of 1912 and irrigated a great deal in the same way during the dry winter of 1912-1913. The problem of getting moisture into the soil for the use of the root systems of these trees involved supplying vegetable matter to the soil in every available form: straw, manure, prunings and weeds. Now we are just getting a good enough soil condition to grow an abundant crop of wild oats, burr clover, fillaree and other plants, and we have allowed this vegetation to become quite mature before plowing it under this year. And if we can get a satisfactory seed bed soon we will probably plant alfalfa and let it stand two or three years before plowing the orchard again—to further open up the soil and subsoil and improve its physical condition. Deep furrows will be plowed out so that irrigation water can be supplied. I do not believe this practice would be advisable unless an ample supply of irrigation water was available, but, fortunately, there is no shortage of water in the Sacramento Valley.

I have never seen so great a change in the character and mechanical condition of soil in so short a time as there has been in this orange grove, and while it is not like loose, mellow, sandy loam yet, it absorbs moisture many times more readily than before and is a far more pleasant and tractable soil to irrigate and cultivate than before. And that this treatment has been proper is conclusively shown in the increased vigor and growth of the trees and in the crops they have produced.

During the season of 1913 it was found to be difficult to get moisture to penetrate more than nine or twelve inches in some heavy land on which there was young seeding of alfalfa. Water was delivered in a head of five cubic feet per second and it was ordinarily divided into three or five checks. The checks are 25, 40 or 50 feet wide and 600 feet long. By dividing the head into ten or fifteen checks and letting it run for a longer time, then turning it off these checks, irrigating some more, and then irrigating a second time before they dried out it was possible to get a penetration of 24 to 48 inches.

FUNDS FOR LEVER BILL.

The Lever bill, appropriating money among the different States for agricultural extension work, quite certainly was of high value for American agriculture. The United States Department of Agriculture has just issued a statement of the funds available for the different States. All of these funds must be spent through the colleges of agriculture to give instruction and demonstration in agriculture and home economics to other persons than those attending the colleges. The amount provided for the different States will depend upon the amount the States themselves provide after a basic appropriation of $10,000 has been made.

According to this California will receive for the fiscal year of 1914-15 $10,000. The maximum amounts it can receive in years following are: $21,039, $30,236, $39,434 and so on, the State being each year entitled to receive $9,198 more than the previous year until for 1923-24 and thereafter $42,759 per year will be available.

The total amount available in the whole country for the next nine fiscal years is $23,120,000. To obtain this total the States must appropriate for like purposes a total of $18,800,000, making a grand total of $41,920,000 to be expended during the next nine fiscal years on direct agricultural extension work. Thereafter the Federal Government is to appropriate $4,580,000 annually, and the States, to take their full quota, must appropriate $4,100,000 annually, making a total annual expenditure for this purpose of $8,680,000.

Co-Operation in Cured Fruit Marketing

Prepared for Orchard and Farm

After all is said and done, dried fruit production is the greatest branch of the deciduous fruit industry in California and when the marketing of dried fruits is on a correct basis and prices as they should be, the whole deciduous fruit industry is in line to advance with vigor. Shipments of fresh fruits are enormous, though more fruit is dried than shipped, and fresh fruit can be grown all over the United States. Fruit canning is a great industry, but far less important than fruit drying, and fruit for canning can be produced elsewhere. But nowhere in the United States can be found the climate for fruit production, combined with the wonderful advantages for drying that there is in California, and the quantity of California cured fruit far surpasses that produced elsewhere, as does the quality. In fact, California is the leading producer of dried fruit for both the United States and Europe. Therefore it is necessary that the marketing of dried fruit be conducted for the best prices and the best development of the markets.

As a fundamental point in the selling of farm produce, and as possibly the greatest single problem before the California farmer to-day, the producer must be responsible for the marketing of his produce and in some way must look after the markets, rather than throwing everything into the hands of the middleman and speculator, to the consequent demoralization of everything concerned.

The California Cured Fruit Exchange, rather a new organization in California markets, is the agency by which the California fruit grower is taking hold of the marketing of cured fruits. Organized in a small way in November, 1912, it has spread to be strong all over California deciduous fruit districts; it is reaching all important fruit markets and is handling large quantities of all kinds of California cured fruits, with the exception of Muscat raisins, which the California Associated Raisin Company attends to for the growers.

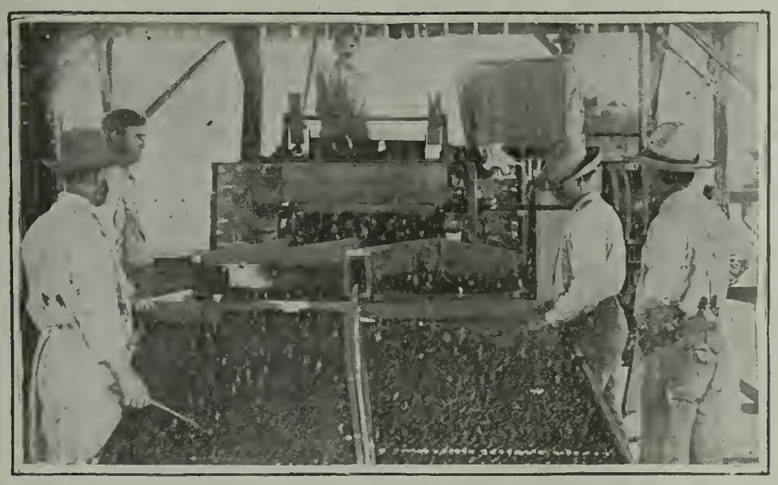
Method of Organization.

The method of organization of the California Cured Fruit Exchange is strictly and wholly co-operative, being as nearly parallel to the California Fruit Growers' Exchange as could be, considering necessary differences in the handling of the products.

There is at first the Exchange itself, which is simply the agent of the Associations that go to make it up in marketing the fruit. Then there are the Associations in various parts of the State that are formed by the individual farmers and pack the fruit and prepare it for shipment. The description in the May issue of the way that citrus Associations of the California Fruit Growers' Exchange were organized and operated will apply almost exactly as well to the Associations in the Cured Fruit Exchange.

The Exchange was organized with just a few Associations, mostly in the northern and central part of the State. Very naturally it took quite a lot of time to devise operating methods and get things started, but once started, growth has been rapid. There are Associations in almost every part of California. On account of effective growers' agencies in the Santa Clara Valley, the Exchange has been kept out of that district, likewise it has held off as much as possible from the raisin country, giving right of way to the great raisin company and other proposed growers' organizations, though even so, Associations are operating at Kerman and Dinuba. And now the Ventura and Orange county dried fruit associations, handling large quantities of dried apricots, have come in, and new Associations have been organized at Banning, Hemet and Elsinore, making the Exchange strong in southern, central and northern California.

Likewise the Exchange has lots of all important kinds of cured fruits to sell, prunes, peaches and apricots, and a full proportion of dried pears, seedless raisins and other varieties of less importance.



Handling Prunes in the Sacramento Valley

J. W. Jeffrey, recently retired to undertake other work, has been from the start secretary and the leader in organizing branches. J. P. Dargitz, formerly head of the Almond Growers' Exchange, was manager until recently, and is largely responsible for the system of operation and success of the Exchange. R. C. Kells of Chico is president and acting manager. A great deal of the success in the markets has been due to G. A. Bolster, a very capable and experienced sales manager.

How Fruit is Handled.

All fruit handled is sold to the trade at market prices, as the Exchange is simply an agent, not a buyer of fruit. There will be plenty of persons to say that a growers' organization handling a non-perishable product will have to be in a position to buy from the grower and dictate a price to the trade, but there is a good deal to be said on both sides of that proposition and the organization that attempts to fix a definite price and corrall the market has certain big troubles laid out for itself, as well as certain advantages.

The Exchange sells the dried fruit to the best advantage at whatever price conditions permit, charging the Associations that make it up a certain commission for so doing. The fruit of the growers is put into one pool in an association according to grade, and then the fruit of all associations is pooled in the same way. Then when a carload of peaches, prunes or what not is sold, the money all goes to the different associations in proportion to the amount of fruit of that kind and grade delivered to the Exchange, and from the associations it is paid at once to the growers. In that way every grower is paid as fruit of the kind he turns in is sold and in just the same amount as every other grower. There is no difficulty over fruit of one association being sold for more than that of another on account of changing market, no difficulty because one lot of fruit is sold sooner than another, and growers get their money as soon as their fruit is sold, which is as soon as they should get it, for the packers certainly charge for holding the fruit before it reaches the trade. At the same time, the grower gets all the money he needs to handle his crop, as the Associations borrow money for members at cost and banks where associations are have proved very glad to make loans on warehouse receipts for fruit, just as they will lend on wheat, cotton and other staples.

Each association has its own local brands as a rule, though the blue diamond brand of the Exchange is on all packages. Possibly later on if some local brand develops a special patronage or price a little different method of dividing sales money may be used, but this method is fair, simple and very satisfactory.

Selling Charges.

Several of the Associations own their own packing houses, while others who have no packing facilities ship their fruit to these houses to be packed. The growers pay to their Associations ¼ cent a pound, or $5 per ton, to cover all Association and Exchange expense, and receive in return the full price received for the fruit. In other words, this $5 pays all salaries, rents, brokers' charges, etc., and even then the grower may have some money come back to him. Just as is done in the citrus associations, whatever money kept for expenses and not used is returned to the grower at the close of the season, for there are no profits or dividends for anybody, though both Exchange and Associations may keep the money for permanent equipment or as a reserve fund for operating expenses, etc., which the Exchange in fact is doing with the little surplus from its apportionment.

Advantages.

That one-fourth cent per pound, or $5 per ton attends to all the selling and running expenses and gives the grower the full advantage of the organization. It will be apparent on a glance that with the ordinary method of selling dried fruit that $5 would be lost in the shuffle and every expense to the seller as great as in the Exchange. The packer doesn't own the fruit and has to pay for the buying of it, which is $1 per ton used up at the start. The Associations already have the fruit and buying expense is non-existent. The packer is gambling that he can sell the fruit at a profit and runs some chance of a loss, so he tries to protect himself by buying low. A quarter of a cent is the smallest change, practically speaking, that can be made in fruit price to the grower, which is the $5 per ton gone all at once. Then as a matter of business principle the buyer tries to get goods for the lowest price possible, deserved or not, and skill in bargaining, inside information on the markets and crops, and other advantages all combine to make that $5 per ton more unsafe than a watermelon in a coon town.

And for genuine benefit to the industry a growers' organization nourishes and develops markets and selling methods as the speculator cannot do. The history of the citrus markets shows this conclusively. The packer doesn't care about prices or markets provided he sells at a profit, and if he can't sell, he simply doesn't buy. The grower has the goods and it is life or death to sell them at a decent figure and build for the future. So the growers' organization has more incentive to be careful with grading and pack, to open new markets and increase demand.

The Cured Fruit Exchange has a map in the office spotted over with pins, each pin representing a broker who is pushing the sales of the fruit. There are about 110 of these. There is also an excellent representation in Europe, where many apricots and prunes from California are sold, and a few peaches.

Prunes was the main fruit handled at the start, coming mostly from the Sacramento valley, north of bay counties and San Joaquin county. Peaches have come in so that with present crop prospects 6,000,000 to 7,000,000 pounds will be handled by the Exchange this year. There will be 2,400 tons of dried apricots from Southern California districts and 600 tons from the north. Pears come from Lake, Contra Costa, Sonoma counties and scattering elsewhere, seedless raisins from the Sacramento valley, so the Exchange has both the fruit and the markets. There are 26 different Associations, each in an important fruit district, and more in prospect.

The crop of 1913 was the first handled by the organization, though a good deal of the 1912 crop was also sold by the Exchange on request of the Associations, and of the 1913 production 12,000,000 pounds were sold at prices thoroughly satisfactory to the members and the fruit turned over to the Exchange nicely cleaned up.

With the success of the Exchange almost every kind of fruit produced in California is in greater or less extent marketed largely by the producer, and to co-operative marketing when properly conducted, California fruit owes a good measure of its success.

CONTROL OF CHERRY SLUG

The cherry or pear slug, which feeds on the leaves of a number of fruit trees, is one of the most commonly observed insect pests at this time of the year. Although its work is not quite serious enough to compel control measures, it is bad enough to make those measures quite desirable, especially since they are very simple.

The slug is so common that anybody can easily identify it. It is about half an inch long, kind of olive green, slimy like the large slugs of the garden and with head part much larger than latter part. It eats the surface off leaves, cherry, pear and plum and other varieties. This slug is only the larval form of a winged insect.

It is very easy to control by blowing lime and dust upon the infested leaves, or by spraying with any of the ordinary soap and emulsion sprays; also arsenate of lead, four pounds to 100 gallons of water. The latter spray is slow in action as the slugs must eat the poison to be destroyed, and the use of fine dust or powder is to be recommended for its simplicity and effectiveness.

Crop Conditions All Over California

Reported by the County Horticultural Commissioners.

ALAMEDA, Fred Seulberger—Apricots are yielding 80 per cent of a full crop; pears will make a 40 per cent crop; peaches, 80 per cent; plums, 40 per cent; prunes, 30 per cent; wine grapes, 75 per cent; berries of all kinds, 100 per cent.

CONTRA COSTA, Frank T. Swett—Pears will make a light crop, but the quality will be unusually fine and the fruit smooth and clean. Prunes also will make a light crop, but will run to large sizes. Wine grapes promise a good but not excessive yield. Table grapes also are in good condition. The barley crop is phenomenal. Hay is so plentiful that any one can afford to eat hay this year. Livestock is scarce and feeders are almost impossible to obtain. The Brentwood Irrigated Farms promise much to the prospects of the county. The soil is rich and deep and is good for practically all fruits and crops. It is now open for settlement.

EL DORADO, J. E. Hassler—El Dorado county up to date is practically free from pear blight. Good crops of hay and grain are being secured. Pears now promise a 75 per cent crop; peaches, 100 per cent; apples, 85 per cent; plums, 80 per cent.

FRESNO, Fred R. Roullard—Deciduous fruits are giving full yields this year. Apricots are now being picked and cut and the quality is fine. Citrus trees are looking fine and from all appearances there is a good setting of fruit throughout the county. Grapes of all varieties will produce a good crop.

IMPERIAL, F. W. Waite—Apricots made 30 per cent of a normal crop. This fruit is all gone now. Grapes are making a 100 per cent crop. Early varieties (Persian) are now being shipped (June 20). Persian No. 23 is almost gone. The cotton crop is in perfect condition. The first bale ginned in the United States this year was ginned at Calexico June 17. This is the best record ever made in the United States, seed to be planted and another crop grown in the same season.

INYO—All fruits have a good crop this year and the acreage is increasing rapidly. Grain and field crops are in good condition. Livestock is in excellent shape.

LAKE, George A. Lyon—Prospects appear much as they did last month, apples, peaches and grapes promising full yields and pears 40 per cent and prunes 35 per cent of normal crop. There is a heavy crop of hay and a medium crop of wheat and barley.

LOS ANGELES, William Wood (by B. R. Jones, deputy)—The prospects for the various fruit as compared with normal are as follows: Almonds, 110 per cent; apples, 100 per cent; apricots, 100 per cent; olives, 110 per cent; peaches, 100 per cent; pears, 100 per cent; plums, 100 per cent; walnuts, 80 per cent. Citrus fruits promise as follows: Oranges, 85 per cent; lemons, 75 per cent; grapefruit, 75 per cent. Grapes, berries, grain and livestock are in excellent condition. Vegetables and field crops are 90 per cent of normal. Every line of cultural matters is in good condition, except that there is a somewhat light set of walnuts and citrus fruit. Ground insects are quite numerous, also the black scale and some fungous troubles. The citrus red spider is not nearly so bad as last year, but is showing in some places. We are making a very close inspection of potato shipments, owing to threatened quarantine by adjacent States.

The next Fruit Growers' convention has been definitely located at Los Angeles. It will be held the second week in November and a record-breaking attendance is expected.

MENDOCINO, Claude Van Dyke—Apples and peaches will give from a normal to a heavy crop. Pears are about three-fourth of normal, with prunes making less than half a crop. Grapes will yield well.

NEVADA, D. F. Norton—Apricots in unsprayed orchards have been damaged by shot hole fungus, making a great many unmarketable; peaches are coming into the market in large quantities and are of splendid quality. Figs, prunes and cherries are below the average, but there is a big crop of all other varieties of fruit. Washington navels are above the average and there is a 100 per cent crop of other varieties of citrus fruits. Grapes have set well. The clusters are very large and there is a promise of a big crop. Logan and raspberries are being harvested. Logans are exceptionally fine. Blackberries will be ripe in two weeks. Vegetables are late on account of spring rains at planting time. A great many potatoes are being planted this season, which promise a big crop. No grain is threshed in the county; it is all cut for hay. With the exception of a little rust, it is in first-class condition. All stock cattle have been driven to the mountains on the summer range.

On June 14 the people of North San Juan held a cherry carnival which was attended by hundreds from Grass Valley, Nevada City and surrounding towns. "The San Juan Ridge" is the home of the cherry, and wagon loads of the large, luscious fruit were brought in and given away to the crowds. In the afternoon cherry pie was served to everybody. "The San Juan Ridge" is the cherry Eden of California.

SACRAMENTO, Howard G. Kercheval—There has been no change in the estimated yield of deciduous fruits since last report. Cherries are all harvested. Tragedy plums are moving, as will also pears, from the Sacramento river district, by June 25. Citrus fruits have all set heavy, and so far there has been no drop, and the indications at present are for a greater yield than ever before. All grapes have set heavy, and indicate the largest crop ever harvested in this county. All bush berries have given very heavy yields; strawberries, also on the first crop, were very heavy.

The asparagus crop from 12,000 acres was a great success and all that was not shipped to Eastern markets was taken by local canneries, so that their pack of grass was unusually large for this year. Cabbage is also being canned here this year for the first time. The hay and grain yield is unusually large this year, and is of very fair quality, the late showers doing very little damage. The Natomas Consolidated are now harvesting their 28,000 acres of hay and grain and report a heavier yield on their lands than obtained in last several years. They are the most extensive planters in the county. The second cutting of alfalfa is now being cured, and indications are for a very large crop all over the county.

Considerable interest is being manifested in walnut culture, especially since Professor Ralph Smith at the Davis convention gave assurances that there were possibilities for it in this section of the State, and it is quite likely that the planting of them will be quite heavy next season.

SAN BERNARDINO, S. A. Pease—At the present time the various crops in San Bernardino county promise as follows: Apples, 50 per cent; apricots, 85 per cent; cherries, 80 per cent; olives, 90 per cent; peaches, 90 per cent; pears, 65 per cent; plums, 100 per cent; oranges, 80 per cent; lemons, 95 per cent; grapefruit, 95 per cent; grapes, 80 per cent; walnuts, 100 per cent.

SANTA BARBARA, C. W. Beers—Both citrus and deciduous fruits are producing up to normal this year. The hay crop proved about normal and a fair crop of grain is assured. There is splendid feed for livestock and prices for stock are high, but cattle are scarce. There is an extra acreage to both small beans and limas, which promise heavy crops. The general horticultural outlook is very encouraging.

SHASTA, George A. Lamiman—All deciduous fruits except prunes will make good crops. All peaches, plums, pears, grapes, etc., are in good condition. Four varieties of early peaches have already been marketed at good prices. Berries are all making good crops. All vegetables and field crops are looking well. Many melons are being raised in the district this season. Grain is well filled and some harvesting is now being done. Grain hay is in the stack and baling is being done.

An irrigation district is to be formed. The election has been called to form the district and vote bonds to carry on the work. It will be of inestimable value to the Anderson valley.

STANISLAUS, A. L. Rutherford—Almonds, grapes, oranges and lemons all have a full crop. Apples, peaches and plums will give 90 per cent of full crop; pears, 50 per cent. The yield of berries was good. Most are harvested. The barley acreage was large, yielding about 15 sacks per acre. About 10,000 acres of oats will yield about 13 sacks per acre. Wheat, less than 5,000 acres, will yield about eight sacks per acre. Livestock is in good condition, but not enough in numbers to eat the feed. Considerable property is changing hands by

(Continued on Page 27).

Valuable Hints on the Olive

In the monthly bulletin of the State Commission of Horticulture for June Charles B. Weeks, Tehama County Commissioner of Horticulture, gives a few notes on olive culture in this county that cannot help but prove excellent for anyone interested in this desirable fruit.

For the soil, he states: With us the old theory that any soil is good enough for olives has been killed for good, as the very best soil obtainable will give correspondingly good results with olives as any other horticultural products; however, very good results have been obtained on land that was of poor quality, when irrigation and cultivation were practiced.

In Corning, where most are grown, the Mission, Manzanillo and Queen, or Sevillano, all have their supporters. The Mission (he states) is comparatively free from disease, a fairly regular bearer and the best keeping olive when pickled, free at the pit and will stand a bit more frost than the other varieties. The Manzanillo will ripen earlier under the same conditions than the Mission, is large sized and a regular bearer. The Queen is very large and ripens early and is a very good producer.

On the other hand, the following faults are found with the above named varieties which make none of them ideal for planting: The Mission is late ripening, which renders it liable to frost danger. The Manzanillo sticks to the pit and is reported to contain an acid that will rust out the tin containers in which it is sometimes placed in less than a year. The Queen is susceptible to olive knot to quite a marked degree and the fruit is liable to soften after pickling unless very carefully handled. Good returns from all three varieties mentioned have been had this season and future planting for some time to come will consist of these alone.

Three methods of cultivation are practiced: Clean cultivation with irrigation; irrigation with alfalfa as a hay crop between the trees, and irrigation without cultivation. By cultivation is here meant anything in the way of working the soil that keeps the tree in a better condition than total neglect. Clean cultivation in the summer proves very satisfactory. Irrigation with the alfalfa keeps the trees and fruit in fine condition, but the fall irrigation necessary to keep the alfalfa from drying the trees out and shriveling the olives will retard the ripening period, and frost will be likely to get a large part of the crop. The olive being a shallow-rooted tree with the bulk of the feeding roots close to the surface, does very well along ditch banks and in orchards where very shallow cultivation and frequent irrigation is practiced.

Fertilization experiments are being carried on by the H. J. Heinz Company, which, by the way, have an up-to-date olive pickling plant at Corning, but it is too early to say as to the results. Lime is being added throughout the Corning section to many groves with the result at least of putting the soil in a much better mechanical condition than it was before. As no experiments have been carried along for a sufficient length of time to determine the effects on the trees, it is enough to say that the easier working of the heavy soil after an application of lime is sufficient to warrant the expense.

No method has as yet become looked upon as standard as far as pruning is concerned, systems ranging from the tree that is never touched, to clipping all of the current season's growth in half as if pruning a peach tree. Some growers go over a tree and remove large branches to admit light, others cutting out small branches of one-half inch or so in diameter to attain the same end. As the advocates of each of the above plans are able to advance very good reasons for their methods, I will let this part rest here.

Twelve or fifteen years ago at Corning many acres were planted to all sorts of olives which were mostly undesirable types, which, after grafting over to the better varieties, are making fine orchards in one-third of the time that it takes to plant two-year-old trees and bring them into bearing.

There is a marked difference of opinion as to whether budding or grafting is the best method of working over old trees. It is very much easier to secure men who can get a large percentage of grafts to stick than it is to find budders who can get good results. With budding it is necessary to cut the tree back and get new wood in which to place the buds, while with grafting, the scions can be placed and started growing the same year the tree is cut back. Bark grafting using pure beeswax is the most satisfactory method.

Olives this season have sold at very high prices. Missions 11-16 inches and up in diameter brought $200 per ton at Corning; Queen olives sold for $200 per ton on the trees. Buyers paid prices ranging from $45 per ton for oil olives to $160 for pickles.

Farming Methods on the Sacramento River

By W. M. Carruthers

Great reclamation projects have en going on for years along the cramento river and in the delta untry and millions of dollars have en expended in reclaiming these ds. When the work seems almost mpleted up comes a flood greater n any before, breaks the levees d this tremendous expense has to undergone again in an endeavor to ep the back waters out in the ring, when the rivers are carrying e snows from the mountains to the ean.

Those who do not realize the wonrful possibilities of these districts nnot understand how the owners n afford to expend such immense ns of money on this work. Exrts claim that the soil of these lands the richest in the world, and will a rule grow anything that is plant- therein. The writer has in mind o districts in particular, where a rtune was spent in reclamation ork and in two years the work had be gone over entirely. It is not e river itself that is particularly ngerous to these districts, it is the ckwaters which stretch for miles d when a wind is blowing against e levee the waves keep increasing force and height and as a rule each ve takes a little of the levee with It is during these periods that the rves of the owners are strained to e utmost; expense must cut no ure, the sole object being to save e levee. Hundreds of men are aced along the levees night and day ling sacks with sand and placing em in the weak places; also hauling ush and sacking it down to keep e water from eating away the levee. metimes a district has as many as dozen levees in the balance and if e goes, the rest would naturally llow. Some day storage reservoirs the mountains, or other agencies r preventing floods will do away ith these anxious hours for the vners when the flood season is on. The islands along these rivers raise eat crops of vegetables and San rancisco gets her main supply from is source. It might be interesting well as instructive to the readers this paper to have a little story out the workings of one of these eat districts.

Some of these districts are devoted tirely to the raising of alfalfa hay nd the manager of one of the large y firms in San Francisco told the riter that the hay raised in these stricts was always in demand by em. One reason is that it has more aves on it than hay cured in a dry imate. This land is subirrigated om the river and the hay naturally aws up some of the moisture. Anher reason is the very good transrtation facilities. This hay is shipped y water and although the rates on nall shipments are just as high as y the railroad, a schooner may be sed which will haul down river about 200 tons each trip and thus a lower te is obtained.

One of the great drawbacks to the ltivation of vegetables along the ver in former times was the scarcity f help, as white men will not as a le do this work on account of the ng and irregular hours. The gathring of the vegetables begins at sunp in order to have the work finished time to meet the boats and get the roduce on the market as early as ossible.

The methods of one of the wealthy nd owners who several years ago etermined to put the 2,000 acres of ch soil which he held along the ver, on a paying basis, regardless of hether the levees broke or not, is pical To accomplish this twelve panese camps were started, the houses being built on the bank of the Sacramento river, high up on the levee so that in case of a flood the waters would not interfere with the homes of the laborers and the crops could be put in and follow the flood waters as they went back.

Dredger Beginning Reclamation Work Along Sacramento River.

A thorough system of truck farming has been established and the owner has reaped wonderful profits from same, but a large amount of consideration and thought was expended in the effort. It was very discouraging in the beginning and failure seemed imminent, but time and the wonderful executive ability of those interested in the undertaking have achieved a success far above their dreams. Twelve farm steadings were erected to suit the location of the land and two steamer landings were built to receive the produce. Each Japanese tenant was given a house of seven rooms, a large barn, well and windmill and a warehouse. This, of course, necessitated a tremendous outlay of money, but we would not have these islands to-day if it had not been for the money, time and brains expended and the abiding faith that success would come. Experience is a hard teacher, but it was experience that showed these men how to run these large tracts and make them profitable.

At first the Japanese were afraid of the contract and thought the white men were trying to get the best of them and they, therefore, did everything in their power to get ahead of the owners. The contract first used required the Japanese to rent the land, produce the vegetables, do all the work, shipping, etc., and in return receive two-thirds of the profits, the owner receiving the remaining one-third. With this system complications arose which it was impossible to straighthen out and the result was very heavy losses to all concerned.

After the first year a contract was made binding the Japanese to ship to certain commission houses which the owner chose, the tenants being allowed the privilege, however, of shipping to a few firms of their own choice. All money was handled by the owner and each day triplicate reports were made out by the commission houses, one being sent to the tenant, one to the main office of the plant, and another to the ranch superintendent. Checks were mailed each week by the commission houses to the owner, and he paid the tenants their two-thirds. A bookkeeper, paid by the owner, was hired to do all the shipping, giving a receipt to the boat, one to the tenant and retaining one on the ranch, for all produce shipped. It was an understood fact that no produce could be received by the boats unless it had been receipted for by the bookkeeper or superintendent, and the commission houses with whom the tenants did business were notified that the ranch receipt was law and all differences would be settled according to it.

During the first year a great many boxes belonging to the tenants were lost, so it was necessary to keep a strict account of where the boxes had gone. The Southern Pacific boats charged one cent each for hauling back the empty boxes and as they were required to give a receipt for all empties received, the tenants were enabled to keep a check on the returned boxes, and in this way avoided the expense of replacing lost boxes.

Any commission houses which were slow in making settlements were dropped from the shipping list and in this way the financial end was handled promptly and without difficulty. According to the contract the superintendent was required to supervise the planting and harvesting of the crops. It was the ambition of each tenant to be first on the market with a new crop, and thus get ahead of his neighbors. They also received the very best prices for the early products and in this manner increased the profit of their ranches.

Peas were generally the first crop, followed by string beans, which as a rule start at a high price, but drop in price as the supply gets more plentiful. It is very important to know just when to pick string beans and the tenants who were most particular in supplying exactly what was demanded kept their prices up longest. When the prices on the beans got so low that it did not pay to ship them, the tenant would want to quit and the owner had to be very watchful at this time, as the tenant paid all the expenses, and, of course, the owner still continued to get his one-third, but by keeping the beans constantly picked, so that the vines would continue bearing, when the price went up again, which it usually did, the tenants again received good profits.

Early potatoes was the next crop and at first 3 cents and 4 cents per pound was received for them, shipped in boxes. When the prices went down the superintendent again had to be on the watch to see that nothing but good potatoes were shipped. The tenants were inclined to get careless when the price was low and ship anything that looked like a potato, with the result that when the returns were received the tenants who had shipped poor potatoes got very poor returns and the commission house was blamed, when it was the tenants themselves who were responsible.

After potatoes came melons, tomatoes, summer squash, etc., this being the busiest season of the year. At one time this particular plant was supplying one-third of the canteloupes which were received in San Francisco. The packing of canteloupes and tomatoes in boxes which will arrive on the market in good condition is a very important factor in regard to the price, as it is not always the number of boxes shipped from a ranch that brings in the most dollars and cents.

The following illustration shows the necessity of perfect packing: One tenant having four acres of tomatoes received a gross return of $1,600, while his next neighbor having equally as good soil, received only $1,100, the difference being lost on account of careless packing.

Another phase of this enormous undertaking, which it might be well to mention here, is the tremendous amount of labor required to care for and harvest crops of potatoes, canteloupes, etc., and as the tenants do not always have the ready cash to hire extra help in an endeavor to get as much out of the crops as possible, the owner advances cash to the tenant when necessary, thus helping out both parties concerned. The money so advanced is always paid back and after the first year none of it is lost.

One tenant in particular raised a brand of melons that suited the demand and used great pains in packing them. He received a bonus for his melons all summer and they were usually sold before they left his place, for shipment to the Fairmont Hotel. As a general rule canteloupe patches will gross from $250 to $300 per acre; string beans, $150; early potatoes, $150; and the land is immediately replanted to late potatoes and beans. Almost all of this land grows two crops a year, except perhaps a small portion of it which is high and on which very early crops are raised and from which a large profit is realized in one crop.

The tenants and the owner of this land are now working harmoniously, each helping the other to make this great enterprise a success.

PROPER SIZE OF NAILS.

A great many people make the mistake of using nails that are too large for the lumber used. For ordinary rought work, such as framing buildings, etc., where two-inch lumber is used, 16d should be used. For use in one-inch lumber, 8d is large enough. For building panels for sheep pens 6d are long enough to reach through two boards and clinch them. Larger nails split the lumber and do not make as strong a job as the smaller ones. They are also more expensive. For shingling, 3d fine is the best size; two pounds will lay a thousand shingles.

The following table gives the length and difference in number per pound:

Size nails.	Length, in.	No. in lb.
3d fine	1⅛	1,140
8d	2½	106
10d	3	70
16d	3½	50
20d	4	30

—Colorado Agricultural College.

Some of the most hard-working farmers you know are not successful. They work so hard physically that they don't take time to think.

Alfalfa a Possible Fertilizer

This title does not signify a wild and impractical dream, but an extremely attractive possibility which is more attractive this season than ever before. Fertilizers have proved extremely profitable to many persons, especially citrus growers; alfalfa just now offers large amounts of plant food in cheap form, giving likewise great amounts of humus, which our soils badly need, along with that plant food. This being the case, is it not a very likely thing that it would pay to apply alfalfa to our lands? At all events, does not the proposition call for careful examination?

Several things bring the matter up. One is the very low price of alfalfa hay. Another is the point brought up by Prof. C. B. Lipman at the Fruit Growers' Convention at Davis, that merely as a means of providing a mulch and protecting the top soil from the loss of humus usually accompanying long summer tillage, a dressing of manure, bean straw, or some such vegetation, would, when possible to apply, prove highly advantageous.

Now for an analysis of the idea as it concerns alfalfa hay. Take it first from the standpoint of composition as related to plant food.

There are three great elements upon which all fertilizer values in California are based; nitrogen, phosphoric acid and potash. These come in varying forms and the price varies with each form, so there is perhaps no absolutely accurate measure of comparison with alfalfa hay. About the lowest value set, judging by prices f. o. b. the fertilizer warehouse, according to a bulletin of the State Fertilizer Control: 15.4 cents a pound for nitrogen; 3.6 cents a pound for phosphoric acid; and 5 cents a pound for potash. For all of these except potash there were other forms of fertilizers in which the kinds of plant food would be quite a bit more expensive.

Put these kinds of plant food into terms of alfalfa hay. There are in 1,000 pounds of alfalfa hay 24.5 pounds of nitrogen on an average, 5 pounds of phosphoric acid and 21 pounds of potash, or just double this in a ton, making 49 pounds of nitrogen, 10 pounds of phosphoric acid, and 42 pounds of potash. Figuring this out, a person in buying a ton of alfalfa hay would secure $7.55 worth of nitrogen, 36 cents' worth of phosphoric acid, and $2.10 worth of potash; total, $9.91. As this is only average, and as there is no definite comparison of value of plant foods, the $9.91 is of course only an approximate value for fertilizing purposes. It might be worth a lot more and it might be worth a lot less, but as alfalfa hay even after delivery in San Francisco is worth only from $7 to $9.50, the balance seems enough in favor of the fertilizer view to merit serious thought.

Now, after the alfalfa is purchased there is the problem of how best to use it and the expenses as well, which problem will be ignored at present in an examination of the theory of the matter. It is well to note, however, in case the expense and labor of application appear too large, that there is an expense in applying other fertilizers also and the cost of alfalfa was far more than what the same alfalfa would cost at point of production.

And in case a person should worry for fear that the alfalfa was taking more from the soil than the selling price, it should be mentioned that alfalfa does not leave the soil as much poorer by a great deal as these figures might lead one to imagine. The nitrogen, which is the plant food contained in greatest amount and most valuable as well, is not taken from the soil, but from the air when alfalfa and related plants are concerned. To replace the potash and phosphoric acid, on which alfalfa feeds heartily, would cost about $2.50 per ton, as can be seen in value statement, not $9.00 and upward.

There are many tons of alfalfa hay stacked from last year and kept for emergency, which now are away below this year's hay in value. It is probable, if it would pay to use alfalfa as fertilizer at all, that it would pay to get this at a reduced price.

It is true that it seems unfortunate to take alfalfa that might be used for stock feed and put it back directly into the soil, but if it has the dollars and cents value that would justify it, the idea would not be bad at all. If there are not sufficient live stock to consume it, it will have to be held over, go to waste, or be used in this manner, and it is fortunate that it has a value for this purpose.

Nearly all developments in recent years in California point to the high value of organic matter as fertilizer, that is, barnyard manure, tankage, dried blood, and other materials of animal or vegetable origin. Although the plant food in alfalfa was calculated from the chemical standpoint alone, the fact that the plant food therein is in organic form deserves attention. It is in a coarse and rough form it is true, but the great bulk and large amount of starch, sugar and woody fiber provides humus making material and food for needed bacterial action which were ignored in the method of calculation, but of high value nevertheless.

Compare this hay with the cover crops usually grown in a citrus grove. At the best, as Professor Lipman pointed out at the convention, not more than half the land in a citrus grove is ordinarily occupied by the cover crop. The rest is shaded by trees. Pickers also tramp it down and the teams run over it. If the best possible results were secured and all the land were given to the crop, an ideal yield of vetch, the commonest cover crop, would be ten tons per acre of green material, which would contain only two tons of dry matter. Since so much land is occupied by trees, half of this would be an excellent yield under the best of conditions, which from the standpoint of dry matter would be little better than a ton of alfalfa hay. Likewise the material in the alfalfa would be entirely from the outside, while much of that in the cover crop would come from the same soil to which it would be returned. Equal or greater value would be secured from one ton of alfalfa hay than from the best cover crop.

Professor Lipman claims that on the average orchard in California, and this would probably apply more to the citrus than to the deciduous orchard, it is impossible to keep up the supply of humus by simply growing cover crops. Furthermore there is such a call for stable manure that there is no great amount available and unused. Likewise continuous summer tillage destroys great quantities of humus, which material our soils need above all others. What can be done about it? Alfalfa hay is cheap this year, in composition it gives us much plant food for the money we would expend upon it, it will supply us lots of humus, and by providing a mulch, would protect the humus already in the soil.

Several years ago Dr. Cyril G. Hopkins of the University of Illinois, one of the leading authorities on fertilization, visited California and suggested or advised the growing of alfalfa on a piece of land on every citrus ranch in California where such a thing was possible, the alfalfa to be hauled on to the land to be used for the same purpose as a cover crop. Citrus men want all their land for citrus, but buying cheap alfalfa hay from the man that raises alfalfa hay as a business when the plant food in the hay is worth more than the hay itself, seems a still better suggestion. Fruit men might hesitate about some features of the proposition, but the good points in its favor are sufficient to offset most of the disadvantages.

A Good Home-Made Land Leveler

By Shelby McKinstry, Sawtelle

In sections of the country where land is irrigated, the matter of having the land perfectly level is a very important one. Where there is uneven surface there cannot be even distribution of moisture. If rain falls it will run from the knoll to the gully, and the knoll will be dry all season, while the gully will be wet and sour and unproductive.

Such unfavorable conditions can be eliminated by the use of an inexpensive leveler such as the truck farmers in some sections of the country use in smoothing down their garden plots. For about two dollars a farmer can buy enough material to build himself a good, durable leveler and with it he can smooth down from time to time the ridges and high places in his fields, throwing the surplus dirt into the depressions, and in that way bringing his fields up to a higher state of productivity.

Three pieces of 2 by 8 bridge plank will do for a starter. Cut them either 6 or 8 feet long. Lay them down and bolt three strips of 2 by 4 across the back of them for braces. Then, across one edge of the front side, for a protector, nail a strip of sheet iron. It will make the leveler take hold of the dirt when the ground has become hard or baked. Ground should be plowed before being leveled, however.

It is a good plan to have the outside braces on the back of the leveling board about one foot from each end, so that holes can be bored on each side of them, about a foot from the top, to permit of the fastening of a small chain to hook the doubletrees onto. It is a good plan to make the hitch about five feet from the leveling board. Bolt a piece of 2 by 4 lengwise at a point near the middle of the leveling board, and to that 2 by 4 bolt one end of a plank about one foot wide and three feet long. This plank should extend out behind the leveler for the farmer to stand upon, and should be braced securely so that it will not be wobbly and troublesome. Several ways of bracing the footboard will suggest themselves to the farmer while he is wielding his hammer.

Picking Up and Dumping Dirt With Home-Made Leveler.

Such a leveler as is here described will serve admirably in smoothing down sand hills and hummocks or uneven spots in irrigated fields. The operator merely straightens up the leveling board, as his team approaches a high place in the field, and stands upon the footboard. In that way he causes the leveler to pick up a quantity of dirt and skid it along to the point where he wishes to dump it. The leveler is easier to work than a slip scraper, because all the operator has to do in order to dump the load is to jump from the footboard. At the same time such a leveler will move dirt just as rapidly as a slip scraper, the investment, however, being many times less than the cost of a scraper.

This sort of a home-made leveler is being used quite generally nowadays in smoothing homestead land for cultivation. It has proved its worth hundreds of times in leveling sand dunes in some of the once-arid regions of the West and Southwest.

DOES YOUR FARM PAY?

The University of Arizona, co-operating with the Arizona Farm Improvement Association, has sent out blanks to Arizona farmers to find out how well farming pays and when a man had figured out the answers to questions contained he would know a good deal more about his business than before he started. A mere application of such questions to one's farm ought to be a great help. For example, the value of the ranch, equipment, stock, hay, feed, etc., at the beginning is asked, then the value at the end of the year. That of itself shows pretty well, when thought is taken, how much progress is being made. The amount of money needed to run the ranch, besides what comes in, is asked both for start and close of year.

A census is requested of both live stock and crops, also amount of produce of various kinds sold and price for same. Reduced to an acre basis, it shows pretty well just what is the most profitable kind of farming lies. Miscellaneous expenses and miscellaneous receipts make another important feature of the reports, which evidently will be used as a basis for some very interesting facts about Arizona farming.

Lots of bright men are found in shady business.

Quick Work in Soil Blasting

The advantages of breaking up the bsoil with dynamite before plant- g trees or vines are so well known at soil blasting on lots of land is coming a standard method of eration. This is especially true nce much of the finest fruit land is

Preparing to Remove the Bar by a Couple of Jerks on Iron Block.

nderlaid by hardpan or a compact ubsoil that needs breaking up.

The holes for the sticks of dyna- hite may be bored by a soil auger, r made by driving in a bar. A soil uger is best in certain cases where is desirable to know just where he hardpan starts and stops so that he dynamite can be placed in just he right place. On the other hand, bar is much quicker to get in the oil and is excellent in gravel that ould utterly prevent a soil auger rom operating properly effectively if t all. A disadvantage is the diffi- ulty in removing the bar after it is riven in the desired depth, for usual- y it sticks like grim death.

The device shown in the accom- anying illustrations is used by the Natomas Consolidated on its lands ast of Sacramento, two men drill- ng 350 holes a day three feet deep, he quick work coming from the bility to knock the bar out of the oil at once.

This is done by a flat iron block, eighing 25 to 40 pounds. A small ar wheel will do excellently. The ron block is seen at the end of the wo chains between the men as they old it up after the bar has been riven into the ground, just before hey jerk the iron upward.

In the center of this iron block or wheel a hole is bored just a little larger than the iron bar with which the holes are made. The bar can thus go down through it without difficulty. This iron block acts as a hammer to drive the bar upward after it has been driven into the ground.

In order that it may have something to hit as it is jerked upward and not fly off the top of the bar, an iron collar or band is welded on to the bar near the top. This can be seen in the lower illustration, the iron just touching it.

The method of operation is as follows. The iron plate is laid on the ground with the hole just where the bar is to be driven and the bar driven down in the regular way, going through the hole in the iron plate.

When the bar is all the way down each man takes hold of his end of a chain, and jerks it upward strongly. The plate flies upward as would a man tossed in a blanket and hits the collar on the bar, acting as a hammer.

Everyone who has ever driven a stake into the ground knows how hard it is to get out by steady pulling or yanking backward and forward. A couple of jerks on the 25-pound iron, however, knocks the bar out in a hurry and all that is necessary is to go ahead and drill another hole, leaving a man coming on later to put in dynamite and prepare fuse for blasting, this man being seen in the background of one of the illustrations.

The thing that counts is the jerk upward on the heavy piece of iron and the fact that it hits the collar on the bar. The efficiency of the plan is seen in the 350 holes that two men can bore in a day.

For those who want another method of getting the bar out of the ground it can be said that a long wrench is fairly effective, the top of the bar being square so that the wrench will hold. The bar must also be perfectly straight, as it is loosed in the soil by being twisted, and if it is crooked it cannot be twisted very well, and if it is, it will make a badly shaped hole.

After the bar is driven in, the operator grips it with the wrench and then by walking in a circle twists the bar around so that he can pull it out, as he could not do with a straight pull. Although satisfactory, hammering the bar upward as told of with the illustrations is probably the most satisfactory method of all, cheapening the work materially.

It might be well to mention that soil blasting should only be done when the soil is dry, or at least not moist enough to pack, for when the powder is exploded in wet soil it only makes a hole, packing the soil tighter than ever around the edges. The right idea is to put the dynamite in at a depth where it will break the soil to the surface but not blow the dirt out. With a good piece of work it will often loosen up the soil so that the surface will be raised six to ten feet on either side, the earth being loosened up excellently.

In breaking hardpan it is well to put the dynamite neither on nor beneath the layer of hardpan, but about the center. Then it will exert its greatest breaking effect on either side. Some people say to bore a hole half way through the hardpan. Unfortunately for such advice, one must go all the way through to know how thick the hardpan is and just what is half way through. Having done so, the soil has to be replaced to a slight extent so that the dynamite will be about the center of the hardpan.

It is also highly advisable to blast the holes several months before planting the trees so that the earth will have a chance to settle a bit and the lumps of hardpan or compact subsoil disintegrated somewhat by moisture and air. When a hole is blasted, settled at once by pouring in a lot of irrigation water, and the tree planted at once, it is not so good by a great deal as when the blasting has been done a long time previous.

On the land shown in the illustrations a large amount of blasting was done last fall for citrus trees planted this spring and the condition of the soil is very highly spoken of. Breaking the compact subsoil and hardpan by blasting is becoming extremely popular, much hardpan land once considered of small value proving extremely valuable for fruit production.

Driving the Bar—Man in Rear Placing the Dynamite.

NEW APHIS CONTROL WORKS WELL.

According to Horticultural Commissioner F. W. Waite of Imperial county, the new plan used by the State Commission of Horticulture in distributing lady birds to control the melon aphis works well and there has been rather less aphis this year than usual. Through the rest of the State the aphis has been worse than usual.

Melon aphis are naturally very bad in the Imperial Valley and unless some check was found they would materially injure the canteloupe crop. For some years the State Commission of Horticulture has been sending millions of lady birds into the valley every spring to eat these aphis as they appeared. A disadvantage is that it takes some time for the lady birds to reproduce in sufficient numbers to hold back the aphis to a very great extent, so this year many of the lady birds were sent down early, living on the barley aphis and getting a good start before the melon aphis appeared. As a result it seems that they were well established naturally when the melon aphis developed and with the help of other lady birds sent out at the usual time, they protected the canteloupes better even than usual. Of course, this might be a matter of the season, but results at least appear very favorable and after several years' trial there will be grounds for feeling pretty sure of the facts.

The child on the farm, as everywhere else, should have every day some time that he may call absolutely his own and that he may use for any right purpose he pleases.

"The farm kitchen is the most important room in the house," says the United States Department of Agriculture. The progressive farmer put the thought into practice long ago.

Opportunity knocks but once, in which respect it differs from most people.

Anderson Combination Dipper, Perforator, Grader and Spreader

The ANDERSON COMBINATION DIPPER, PERFORATOR AND GRADER is built in the Santa Clara Valley, where the requirements of prune growers have been carefully considered and every possible advantage incorporated into the machine. Can be furnished with or without rinse tank. Made in various sizes for hand or power. We manufacture a full line of fruit handling machinery including trucks and cars. Write for illustrated catalog, which describes the entire line.

ANDERSON-BARNGROVER MANUFACTURING CO., West Julian St., San Jose, Cal.

Ways of Improving Citrus Varieties

Since the days of '49 no one thing has brought more fame to California than the golden oranges of the south and of the great central valley at the foot of the Sierras. No other horticultural product requires such detailed care and wise handling, and no other product responds so well to proper treatment. No other fruit has been brought to such a high state of perfection, no other horticultural product gives such high returns per acre.

Progress has been made by the continual striving of the growers after best methods, and yet more than all other fruits there remain great and wonderful possibilities through scientific work and observation and the co-operation of the growers. A glimpse into these possibilities along lines commonly overlooked was given by Prof. H. J. Webber of the University of California during the Fruit Growers' Convention at the University Farm. His address, being given rather informally, can be reported only in outline, not word for word.

Obtain Unusual Specimens.

Although our Washington navel has such a high standing, it is not a fixed and unchangeable variety. Here, there and everywhere changes from the most normal type occur in greater or less degree and by observing and taking advantage of these possibilities wonderful progress can be made. It has been said that every year probably a dozen wheat plants come into existence that could be used to revolutionize the wheat industry of the world, provided they were observed, segregated and nursed along. In the multitude of wheat plants grown, the twelve plants round out their life unobserved and their grain is lost among that of millions of others.

Fortunately our citrus trees are on a different footing. The trees and the individual branches remain and produce year after year. Being overlooked one season, their nature can be observed again the next. The golden fruit hangs in plain sight to attract attention and is picked off piece by piece where all differences can be easily marked when any care or thought is given.

Continuous Harvest Possible.

One easy possibility is a great extension of the harvesting and marketing season for the navel, which would be a great advantage. The navel at the end of the fruit is horticulturally a disadvantage, but as a trade mark, or a mark of distinction, along with the excellent quality of the fruit, it is worth every year thousands of dollars to California. By observation trees ripening their fruit late, or holding their fruit on in good condition could be selected, propagated and reselected until the shipments of Washington navels could be extended over the whole period now occupied by the Valencia. The Valencia is an excellent variety, but lacks certain very desirable characteristics of the navel, and if the navel with its trade mark on the tip could be substituted, it would be of great value.

Very easy it would be to extend the season somewhat. Trees that naturally hold their fruit longer than others advertise themselves strongly. It is true that fruit held too long on the trees becomes puffy, but trees exist whose fruits do not become puffy, or to a minor extent.

There is this about selection of plants with definite characteristics away from the common—the longer the selection is continued, the more rapid the variation from normal is likely to become, within reasonable limits. Although on first selection no great extension of the season is likely, by continuous selection a great extension of the season is likely to occur.

And what applies to extending the season onward, applies equally to its extension forward in approximately the same fashion. As the navel selected trees of the Washington navel could be developed to overlap the Valencia season one way, so others could be developed to meet and overlap into the season for late Valencias. Thus the citrus planter would not select merely Washington navel trees for planting, but early navels, mid season navels, or late navels, as the case might be.

It may be many years before the ideal is accomplished, but the fine thing is that every two weeks' approach to the ultimate ideal adds high value to the citrus industry.

Breeding From Navel Oranges.

Selection above spoken of is merely from the navels already growing; it ignores the still greater possibilities of citrus breeding with the navel as a foundation. Some very interesting features regarding the seedlessness of the Washington navel and the method of pollination exist in this connection.

The navel has no seeds because the sexual parts of the flower are defective, though it is possible for seeds to be developed. In the normal flower of most plants the pollen lights on the stigma, or the top of the pistil, and sends down growths through tubes to the base of the pistil, giving life to the embryo seeds. Seeds cannot develop unless this occurs. In most plants also fruits cannot develop unless the seeds develop and normal pollination as described above occurs.

The navel might as well not have any pollen, or any stigma for that matter, for all the good it does, as the pollen after striking the stigma and sending down the growths into the tubes finds those tubes stopped up, as the pistil is solid. The embroyo seeds are not fertilized and do not develop, hence no seeds occur naturally in navel oranges.

Since no seeds occur in navel oranges in the regular course of nature, by following nature no navel seedlings can be grown, and real plant breeding with the navel cannot occur, except by overcoming nature and getting at things from a different angle.

This can be done. The plant breeder can put the pollen on the stigma and it will send out the growths downward. The plant breeder is able to open up the tubes for these growths to reach the embryo seeds and the seeds will develop just as in any other plants; seedling trees can be grown, and plant breeding accomplished as in the other varieties. True it is that even under these conditions the navel orange will have but few seeds, but by treating enough blossoms all that could possibly be asked for can be obtained, and the navel used for plant breeding.

That is but part of the pollination problem of the navel. Not only is the pistil solid so that pollen growth cannot normally get down, but the pollen itself of the navel blossom is defective. The plant breeder simply takes pollen from other varieties of oranges or citrus trees and raises a cross bred instead of a pure bred navel. That cross breeding is more likely to develop valuable varieties than pure breeding.

Earliness can quite certainly be secured by crossing with some early orange, of which there are several in Florida, not grown here in California and never likely to be except for purposes like the above. For lateness other varieties can be used aside from the Valencias. A Chinaman who is one of the leading Florida growers has, for example, a very fine and very late orange, the Louie Jim Gong (name not guaranteed correct), which offers excellent prospects. And, it might be said, for this is a big subject, earliness and lateness to extend the season of ripening, is but one of many qualities which can be secured by crossing and selecting the navel with other orange varieties.

Selecting Known Varieties.

And then besides the two great agencies of breeding and selection from variations in present navel trees there remains a third great possibility of selection from among the many known citrus varieties now ignored in California. This applies probably more to other citrus fruits than oranges.

For example, the Marsh's Seedless pomelo, or grape fruit, is the standard variety in California. It is worthy of note, however, that it is considered an inferior variety in Florida, the reputation of whose grape fruit is superior to that of California. If we are going to grow grape fruit, why not get the best? Possibly the Marsh's may be the best for California, though poor in Florida, just as the Washington navel is the best for California, though inferior in Florida, but the chances are much greater that there are better varieties not grown here, than that the Marsh's is the best there is. And the selection can be carried on with other citrus fruits than the pomelo.

California Pomelos Best.

Just here a little digression will be permitted to give a little experience of A. D. Shamel on his recent voyage to Brazil, told of at the convention. Mr. Shamel's work on the improvement of citrus (and other) varieties by tree records and observation of individual differences is far famed. On the boat he had a number of pomelos from California selected from trees noted for the fine quality of their fruit. They were not of a different variety, understand, but had been obtained by selection within the variety.

At the table a discussion arose of the comparative merits of California and Florida grape fruit, one individual constituting himself the especial champion of the Florida product, with which the ship was well supplied. Mr. Shamel quietly had the steward place every morning half a Florida grape fruit and half of the selected California fruit before each person at the table for breakfast.

When supplies were exhausted, the Florida champion remarked that the steward was not supplying the best grape fruit any more and was told that there only had been a few, which were select California specimens. Thus we can improve our citrus fruits by selection, though the comparison was perhaps not fair, seeing that the California fruit was the finest obtainable and the Florida fruit only the regular market product. Who knows what we can do when bud selection, true plant breeding, and full trial of present varieties all have been well carried out?

The Field of Hybridization.

More than is given above might be said while merely skimming over the surface, concerning the hybridization of the different citrus families, as the orange, lemon, citron, pomelo, tangerine and others. A cross of the pomelo and tangerine, called tangelo, obtained by Dr. Webber long before coming to California, is now grown extensively in Cuba and the Isle of Pines. The Thornton orange, poor eating but fine appearing and excellent for marmalades and drinks, is a similar cross with the orange, being quite hardy also.

These are but two of many possible additions to the citrus family. Take, for example, the glove skin of the tangerine, which is responsible for much of the popularity of that fruit. It is as certain as anything in plant breeding that this glove skin could in time be secured for the orange, even for the Washington navel. But if the possibilities were told of at o time, space and patience would exhausted.

Great as is the California citrus dustry, highly advanced as methods, we are only part way real ing what is in store for us when horticultural scientists delve de into plant breeding and bud select By the help that wide observation give, progress will be ever more ra when each citrus grower takes it up himself to keep tree records carefu observe carefully all bud variatio and even take it upon himself, whe possible, to do a little plant bree

CODLING MOTH PARASITE II EFFECTIVE.

Some years ago a parasite of t codling moth was introduced which was hoped would largely check t pest. Although this parasite, the Ca iephialtes, has become well esta lished, it has apparently done nothi to materially affect the moth and recent article in the Monthly Bulle of the State Commission of Hortic ture goes into detail on the reaso The article develops some interesti features of work with insects, showing why the parasite is go Europe and of practically no use he

For one thing the ovipositor egg laying projection, is not lo enough to reach all the eggs, t cocoons of the moth often being little too thick. Thus so ma cocoons escape that at the best of the moths are not much reduced numbers.

Another important factor is t our apples packing is done indoo where the parasite cannot get at t cocoons as well as it could out doors, as is the case in Europe, a besides, our spraying reduces t number of wormy apples falling the ground from which worms wo develop to provide hosts for the pa site.

And for a third great factor, ma parasites are destroyed by the bir The birds also consume great quan ties of codling moth worms just the period when the egg of the pa site is in them, thus further reduci the number of parasites which c hatch out. Altogether, the many f tors which keep down to a compa tively small amount the numbers the parasites prevent it from beco ing important enough to become any apparent aid in checking the c ling moth. For that matter it is v rare that the horticulturist can g up spraying, fumigaion, etc., and r on insect parasites to clean up ve tation. However, every little hel and when parasites only destroy small proportion of injurious insec they do some good, and the introd tion of insect parasites is a w meriting sincere encouragement.

FUTILE ADDITION

A man passing a saloon was s denly startled by a figure flying of the door and landing in a heap the sidewalk.

"You have been thrown out," served the passerby.

"Yes," said the victim, "but wait! There are four of them there. I am going in right now throw them out one by one; sta by and count."

The man re-entered the saloon, a at once there was a commotion side, and again a man came fly out, lighting not too gently on sidewalk.

"One!" cried the counter

"Never mind counting," said a v from the sidewalk; "it's me again. Exchange.

Personally, we view with al this movement to Oslerize the r er. A precedent for the eradicati useless males would thereby be est lished. Viva la Rooster. ("Viva is the Mexican for "Don't kill I m to-morrow").

Soil Practice for Alkali

The way to get alkali out of the soil is to wash it down and out, as has often been said when there is a place for the water to go, and various other favorable conditions are present. It is not as easily done as said, and forgetting the theory, and coming only to practice, it is probably true that the following description of cultural methods for overcoming white alkali, by Prof. Stanley F. Morse of Arizona, will be found very valuable. The reference is to white alkali, for the advice will not hold good with black, but black alkali can be changed to white without great difficulty. Likewise for this advice to work there must be, as said above, some place for the water to go to.

However, these are the directions given, which are more explicit than most and rather new in certain respects, appearing very feasible.

Throw up rather high borders about two rods apart and flood with a large quantity of water; if the fall in the land is too great, plow up cross borders in order to hold the water on the land. If the soil is of a tight, heavy nature, it would be well to use a subsoil plow previous to leveling the land and throwing up borders. It would be desirable to use a second heavy irrigation if time and water were plentiful.

As soon as the soil is dry enough so that a team can get on it without injuring its texture, plow the land and harrow it thoroughly, making a fine seedbed and a good surface mulch. Then immediately plant one of the grain sorghums in rows 36 to 42 inches apart. Keep the soil loose by cultivation not only after every irrigation and every shower, but also whenever it may become at all compacted by the baking of the sun.

Feterita would probably be an excellent crop for this purpose, and if one has a number of hogs it would be a good idea to turn them into this feterita and let them pasture it down or else harvest only the heads and leave considerable residue on the land which could be incorporated with the soil. Kaffir corn or milo maize could also be used.

After the grain sorghum is harvested one can sow wheat or barley at the rate of a bushel and a half per acre. It would be a good plan to pasture this crop, also, more or less throughout the winter; in the spring allow it to make as large a growth as possible to be turned under. Another grain sorghum crop might well follow the next summer.

In conjunction with this treatment, it would be desirable, if manure or straw is available, to haul this material out on to the land and spread it thickly on the worst spots.

In every instance, before planting the crop, a very heavy flooding with water should be given. I feel sure that a persistent following of this procedure would eventually eradicate the alkali and make this land extremely productive. The foregoing recommendations are based upon my own observations of successful farm practice in subduing alkali in Arizona.

The Fight Against Johnson Grass

Some farmers have pretty near gone broke fighting Johnson grass, and can go broke quicker by not fighting it, all of which is another way of saying that Johnson grass is a bad pest and hard to overcome.

Most operations against the grass are governed by the nature of the plant in propagating itself by means of seeds and by rootstocks, each joint of which can send out roots and leaves to form a new plant. Ordinarily the formation of seed may be prevented by cutting the plants before the seed is sufficiently mature to germinate. This, however, is difficult in practice as in hot weather seed develops very quickly, and attack against the rootstalks is better.

It is also claimed that continuous pasturage, or continuous cultivation, as against morning glory, will also so exhaust the roots in their effort to send up new shoots that the plants will finally be killed. Although the pasturing is fairly effective and is good in saving labor and helping the stock, the continuous cutting back of the top is not as effective as it should be. Another very effective method is to attack the rootstocks in a different manner entirely.

These rootstocks last only a year, they do not hold over like morning glory roots, and, barring the seed, are the agency by which a plant survives from one year to another. In spring the rootstock formed the previous year sends out roots and top and makes a good plant, exhausting itself in the process, and that new plant, when it is well established, sends out new rootstocks to do the same thing the next spring. The plan of attack is simply to cut off the plant under ground, just when the old rootstock is done for and before the new one has started. The cutting off kills the plant, and it has neither old rootstock nor new to make new shoots, so the deed is done all in one operation.

The new rootstocks start just when the plant is starting to flower out, as reproduction starts both ways, top and bottom. The rootstock, which is as thick as one's finger, can be found starting at this time, and a weed cutter should be run under it. If the cutting is done too early, the roots will start up again from the old rootstock. If cutting is done too late the new rootstock will be able to send up growth also, and claims of ineffectiveness are largely due to using the weed cutter either too early or too late. However, as some plants are always a little ahead of others, it is fairly certain that in every job there will be a few that will escape, and these the following year will have to be dug up. However, cutting at the right time will kill most of the plants, and the few a little too far ahead or behind will be so badly hurt that only weak plants will be left to start next spring, and these can with little time or trouble be finally destroyed.

FRUIT IN THE STATES.

A comparison of the fruit production of the different States is made in a bulletin recently sent out by the U. S. Chamber of Commerce, showing a great difference in the value of fruit produced in California and elsewhere. A circle is placed in each State on the map of a size proportionate to the value of the fruit crop. The circle of California far outranks all others, the value being $47,746,000 for 1909, the year for which the comparison was made by the U. S. Census Bureau. New York made the next best showing with $28,826,000 worth of fruit, Michigan coming next, and so on down the line, nearly all States appearing to produce larger amounts than we here in California are inclined to think.

The varieties of fruits are indicated by varying shades, apples being represented by white, berries and small fruits by solid black, peaches by diagonal lines, etc. A noticeable feature is the fact that the big showing elsewhere is almost entirely with fruits of minor importance in California, so that the fruits grown mostly here are grown little elsewhere. Apples, for example, are shown in California by a very thin slice of the circle. In most other States they are approximately half of total production, often much more. In the other States usually berries and small fruits are shown as taking second place to apples and at least cutting a big figure. In California they occupy little space in the diagram, though enough to make a fair showing. Thus leaving out apples and berries, the other States are overwhelmingly overshadowed by California.

As is to be expected, California's fruit production is diversified so as to be well divided among several fruits. Oranges make the best showing, with grapes not far behind, though other citrus fruits together with oranges make up over a fourth of the whole in value. Grapes are well ahead of prunes and plums, the third in importance, peaches following prunes, then "all other fruits," then apples, and berries last of all.

Conditions have changed somewhat since 1909. Oregon and Washington would doubtless be much farther up the list now than then, and California through her great increase in acreage would probably show still better than before in comparison with the rest of the country.

HOW TO JUDGE KAFIR

From an exchange in Texas we take the following on the judging of kafir. It is for children at school who are studying scientific agriculture, but anybody who intends to plant Milo or other grain sorghum by following the details here may find some good points on seed selection. There is possibly as much room for improvement in seed selection as in any other one thing in the production of our grain sorghums.

The directions to the children are as follows:

1—Place the kafir heads on a table before you.

2—Arrange the supposed best to your right and the next in order.

3—Measure length of each head.

4—Measure circumference of each head in center of central stem.

5—Weight each head and record the weight in ounces.

6—Note size of kernels, color and tendency to shatter.

7—Score several heads according to the requirements of the score card for single head.

The kafir heads should be uniform in size, shape and type. This is for an exhibit:

In "structure" the central stem should be three-fourths as long as the entire head. The seed stem sections should be found at regular intervals, at least five in number, the distribution being even, uniform, with close setting joints.

Head must be pushed out of the boot.

The color of Blackhull white kafir should be white grain with pink speck on tip. The grain should be large—the larger the better.

Market condition requires that the grain should be sound, firm and mature.

The length of the heads should be from eleven to thirteen inches.

From seven to nine inches is the requirement for circumference of the heads.

An open base is not wanted. The first seed stems should not be too long, but thickly set and well filled close up to the main stem.

As regards "tip," seed stems should not be too tapering, but well filled with heavy kernels. The tip seed stems should not be over one-fourth as long as the head.

Seed stem branches must be well proportioned to length and size of head. Open spaces are not permissible. Kernels should not shatter easily when handled.

PLANT FOOD OR POISON.

Certain soil investigators of the U. S. Department of Agriculture have held that much of the apparent lack of fertility in soil was really due to the presence of toxic or poisonous substances, not to a deficiency of plant food. This idea has been strongly opposed by a big majority of agricultural scientists for numerous reasons, and experiments completed recently at the University of Idaho indicate that there is little foundation for the belief.

Experiments leading to the belief that toxic substances were responsible for decreased fertility were conducted by the use of solutions. There were good reasons for believing that substances poisonous in water would not be poisonous in soil, hence that the experiments with solutions did not show what it was supposed they did.

To put the matter to the test toxic substances of the kind supposedly retarding plant production were prepared and placed both in water and in soil. In the water they delayed growth, but in soil they had little or no effect.

Decreased production is quite surely due to lack of available plant food and to poor physical conditions of the soil. Production is kept up to standard by proper fertilization and proper soil handling.

The editor of a Southern farm paper gives the surprising information that he does not send answers to unsigned letters.

NEW CITRUS HYBRID.

County Horticultural Commissioner Earle Mills has discovered a new citrus fruit at Oroville which is attracting a great deal of attention, and may possibly prove of considerable economic importance in California. The fruit is a great deal like the citron and would be used in the same way, the rind being the valuable part. Two of the fruits were displayed at the Fruit Growers' convention.

The fruit comes from a tree about 15 years old, source unknown. Dr. H. J. Webber of the Citrus Experiment Station, University of California, stated that although the fruit in form and nature closely resembled the citron, it had features which indicated a lemon and orange parentage and that he thought it was probably an orange-lemon hybrid. That it is not a real citron is indicated by the fac that the tree is very hardy against frost, while the citron is a delicate citrus variety. This tree, according to Commissioner Mills, was unaffected by frosts that nipped oranges back quite a bit.

The quality of the fruit also is said to be excellent. Mr. Mills had some pickled this winter, along with some of the regular citron and thinks the quality of the pickle much superior to the citron. The tree is a heavy producer, having its crop ready in November, though the fruit hangs on a long time, the two taken to the convention being part of the winter's crop, the last left on the tree.

OUR FLEXIBLE LANGUAGE.

A teacher in a large city school sent one of her scholars to buy a pound of plums from a fruit vendor on the street, and as she handed the little girl a dime she said:

"Be sure, Mary, before buying the plums to pinch one or two, just to make sure they are ripe."

In a little while the child returned with flushed cheeks and a triumphant look in her eyes.

Handing the teacher the bag of plums, she replaced the dime on the desk and exclaimed:

"I pinched one or two as you told me, and when the man wasn't looking I pinched a bagful."

Menace of the Eight-Hour Bill

Among the multitude of measures to be voted upon at the general election in November, one, the eight-hour bill, stands out for the special disapproval of the farmer, and on account of the injury it will do the State, for the disapproval of everybody else also. It is particularly wretched in its relations to agriculture and at the California Fruit Growers' convention at Davis the Farmers' Protective League was formed for the special purpose of helping to defeat this measure, also in very minor degree some other possible measures, the so-called "right to work" bill being the most important. That conditions were considered extremely threatening and extremely vital to the welfare of the State was shown by the deep feeling and strong expressions of all attending. It can be truly stated that every farmer needs to take this matter to heart and see that he not only is right on it, but that everybody whom he knows is informed of the true bearing of the measure.

Many people believe, possibly a majority of them, that it would be an excellent thing if things could be put on a basis by which no one had to work more than eight hours a day (48 hours a week, according to the bill). Maybe so, maybe not, but somehow or other it is occasionally necessary for some one to do a little extra work now and then. Emergencies have been known to arise calling for a little extra work.

Unfortunately for the State in these days of violent political experiment, there are thousands of people who have the extremely simple belief that if the country wants a thing, a law or so will fix it—all necessary is to legislate upon the subject, and that it will never be necessary to work more than eight hours if the law says not to. It is going to be one of the costliest political experiments with which the United States was ever cursed if a majority of the voters in California think that all natural and economical laws can be regulated without trouble and without confusion. By the proposed law not a single person in California could work more than eight hours a day for a single day in the year unless he was working for himself. Remember, also, that when some special work is seen coming it is impossible to rest up for it, or take time off to put in when needed. Not a single minute's overtime is to be permitted on a single day, or the employer is to be fined $50 at the very least, or else go to jail for ten days. The originators of the bill kindly permit overtime "in cases of 'extraordinary' emergency caused by fire, flood or danger to life or property." Nothing else goes. So it is as clear as the nose on one's face that for a person to have reasonable grounds for voting for this measure, he must believe not only that an eight-hour law is desirable, but that the measure outlined above is an excellent way of obtaining the desired result If any person so believes, he is respectfully requested not to read farther.

This measure is NOT a measure prepared by our Legislature or submitted by them to the people for their approval or disapproval, as the best method of obtaining the idea desired, as the majority of voters would suppose on account of its place on the ballot. The bill was introduced into the Legislature as it stands, word for word, and was considered too idiotic for discussion, being killed at the start, and our last Legislature has the reputation of going about as far along those lines as the people at this time desire. It has its place on the ballot as an initiative measure only—not a recommendation, but far the contrary, as the turning down by the Legislature makes apparent on half a thought.

The New Zealand Method.

Thomas Jefferson is said to be the author of the old saying that the best governed people was the least governed. Maybe so, maybe not, but New Zealand seems to have the highest honors for the contrary. At least, New Zealand has done more than any government on earth along the lines of the proposed measure. New Zealand has an eight-hour law, and that eight-hour law is not a circumstance to the one proposed. Her legislators, whether they were right or wrong in their ideals, it makes no difference, at least did things in a thoughtful, reasonable way.

The eight-hour law of New Zealand might be said to be persuasive rather than depending upon brute force and stubbornness. That is, it makes it to one's disadvantage to hire a man for more than eight hours, yet taking into full consideration the fact that circumstances will arise under which it will be necessary to work longer. The California hill supporters don't think that more than eight hours' work could possibly be necessary.

And notice this: When work has to go on longer than eight hours, under the New Zealand method, it is decidedly to the advantage of the worker. It would not be so in California at all. If an eight-hour is supposed to do anything under the sun it is supposed to help the worker, and if an eight-hour law is to be used at all, why under the sun didn't the proponents of this measure get up something sensible?

The New Zealand idea is simply to charge overtime of one-half extra. Say that 20 cents an hour is the reg- Say, that 20 cents an hour is the regular remuneration, anything over eight hours would be 30 cents an hour. Under these conditions nobody who can help it will work a person more than eight hours, but when the work has to be done or ruin result, it can be done. The manufacturer can pay extra for the privilege of rushing out a special order, the farmer can pay extra if his hay has to get in to avoid rain damage, if his fields have to be plowed, if his fruit will spoil if not picked, etc. Clearly, that is the sensible way, provided an eight-hour law is to be adopted. It is the way nearly all labor union rules provide. It is not the way that this bill would have it—nothing of the sort. A good big part of the people would say that no eight-hour bill at all should be adopted, but that point can be ignored in the greater menace of a bill having such an insane method of trying for a certain result.

Ruin for Canning Fruits.

Realizing the actual application of this measure, the farmer, fruit grower, dairyman and ordinary citizen, even though he has no interest in agriculture, can quickly see how it works out in many kinds of employment, such as domestic service; how the laborer who through accident was detained in making repairs would have to stop when the whistle blew; how a job within ten minutes of completion could spoil because it would be impossible to finish it; how the teamster detained on his way would have to get off the wagon and walk home, or getting in the gate at legal quitting time would have to leave the horses in the harness until next morning; and so on ad infinitum. Being particularly concerned with agriculture and hitting only one or two of the high spots, much will here be left to the imagination.

The grower of drying and shipping fruit of course would lose all fruit impossible to be picked and handled in an eight hour day, but prices might be decent for the rest. Prices of every bit of canning fruit would go to the dogs for a year or so until a readjustment occurred under an eight-hour law, which shows how the thing would work from a rather indirect standpoint.

The canner, however, might strike it rich for the year or two. The canner will take all the fruit he can handle. Unless with a very short crop, however, he could not handle all in an eight hour day. The rest could go for hog feed, if hogs were available, and so would be worth almost nothing. Therefore all the other fruit would be worth no more than that given to the hogs and the canner would pay just enough to get the fruit delivered. It would be nuts for him (for a year or two) because the output would be so curtailed that selling prices would be high, while prices for fruit would be low. Of course fruit orchards would be uprooted and production cut down until prices would be satisfactory to the producer again, provided an extra big crop did not come along and ruin prices once more. It is a very pleasant thing for the consuming public and public reformers to contemplate. That was one of the big arguments which prevented the eight-hour law for women from applying to agriculture and domestic service at the last Legislature, but it is a clean sweep this time for men and women and everybody else in all kinds of labor. The boss will have to do every bit of emergency work. Even the foreman can't help or stay around and make his report, for he is employed also.

The only way apparent for things

(Continued on Page Thirteen.)

Divide By 2

FIGURE barn-work costs in wages, hard work, time, energy, for *one year!* Divide it by two! That's what happens when you put Star Barn Equipment on the job. It's going to pay you to look this up. All it will cost you is the trouble of writing. Send this coupon to-day for all the facts pertaining to labor-saving

STAR
Barn Equipment
Stalls, Stanchions and Litter Carriers

Star Barn Equipment is absolutely in a class by itself because of patented time and labor-saving features not found elsewhere.

Star Stalls and Stanchions are built in Units—stalls grow with herds. Keeps animals lined up to gutter by new and vastly more practical method—instantly adjustable to all cow-sizes—more comfort for cows—less work for men.

Star Litter and Feed Carriers are speediest, easiest raising and lowering and most durable labor savers on market. Proved by hundreds of tests. Roller Bearing throughout. Swinging Room clears barnyard of all obstructions.

FREE—Our instructive 100-page Catalog explaining ALL. Let us send it. Write your name and address here.

Name .....

Address .....

Clip out and send today to
HUNT, HELM, FERRIS & CO.
45 Hunt Street, Harvard, Ill.

PACIFIC COAST DISTRIBUTERS
PACIFIC DAIRY MACHINERY CO., San Francisco, Cal.
MONROE & CRISELL, Portland, Oregon
DAIRY MACHINERY CO., Seattle, Wash.

A Product Of 40 Years' Experience

For 40 years and over we have been successfully manufacturing lubricating oils for hundreds of different purposes. When the automobile came into use, our experts made a thorough study of its construction and operation and we produced Zerolene, a special oil to meet the exact lubricating requirements of this type of gas engine.

ZEROLENE

THE STANDARD OIL FOR MOTOR CARS

We therefore recommend Zerolene not merely as a good oil, but as actually ***the best motor oil we can make.*** It is giving satisfactory service to thousands of motorists. It keeps the motor cool by perfect lubrication; cuts down repair costs and lengthens the life of the car.

Dealers everywhere. Ask our nearest agency about delivery in bulk.

Standard Oil Company
(CALIFORNIA)

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

Walnut Pointers at the Convention

The conference on walnut culture at the Fruit Growers' convention at the University Farm was widely attended and of great interest. Some points brought up will be welcomed by our readers, especially after the story of Walnut Culture in Central California, appearing in our last issue.

High prices for nuts of the new plantings are officially stated to be probable by Carlyle Thorpe of the California Walnut Growers' Association, owing to the great superiority of the selected varieties over the ordinary walnut. As is known, the big proportion of California walnuts are seedlings. Budded nuts are mostly Placentia Perfection. These at first drew a premium of 1½ cents over ordinary No. 1 walnuts, but the premium has advanced to 3 cents and is increasing steadily, owing to the willingness of the consumer to pay more for a choice product. The coming advantages rest in the fact that all new plantings are made of chosen varieties, either Placentia Perfection or some other good nuts, like Eureka, Franquette, Mayette and others.

Franquette and similar varieties have as yet been too few to be marketed in appreciable quantities until recently and are scarce yet. Mr. Thorpe told how the Walnut Association had handled what were available last year and the price went to 25 cents a pound and the trade calling for far more than were grown. Other good varieties are up to the standard, the Eureka being considered an even finer market nut than the Franquette. Thus those who make walnut plantings of good varieties can reasonably expect a much better price than the average No. 1 nut brings now.

Increased Production Helps.

The striking statement was made by Mr. Thorpe that increased production of California nuts was to be welcomed for increasing prices, which is contrary to most experience, though easily explainable. California walnuts are only a part of what is used in the United States now and are vastly superior in quality to the imported nuts. As purchases depend upon quality, the consumer who buys inferior imported nuts is not overly pleased with them and delays purchasing more, thus hurting the market and prices. Very naturally, when there are California nuts of fine quality, he will come again soon to buy more, thus greatly increasing consumption and improving prices. Until California production increases to drive out imported nuts this fortunate condition cannot fully develop. Don't be afraid of an over-production of walnuts while quality and marketing are up to present standards.

Care in Marketing Pays.

A unique fact is brought out above that while the Franquette and such nuts bring a premium here, imported nuts are inferior in price and quality to ours, the imported nuts coming largely from the home of the Franquette, the Grenoble district of France. The reason is the poor handling and marketing. Nuts are all together, good, indifferent and bad and they are marketed through speculators and buyers. Everything in the shape of a nut goes in, and of course quality and price are down.

Contrast this with the California Walnut Growers' Association. This grades carefully and sells on a guarantee. Samples are taken and cracked and the guarantee is made that 90 per cent, or some other definite amount, when cracked, will prove good, sound nuts. The association sees that the nuts run two points above guarantee, so that buyers are delighted to buy through the association, and the association is ever increasing in strength.

The association is now planning to pack budded nuts in five-pound bags bearing the association brand, advertising this brand extensively, yet permitting the last purchaser or the consumer to buy the nuts for same price as now, yet giving the association the same price as now, and perhaps better prices.

As showing the effectiveness of cooperative marketing, the association is able to market the walnuts at a cost of only three per cent, almost the record, except for the California Fruit Growers' Exchange, which markets citrus fruits for only two per cent, or including cost of the sub exchanges for a little less than three per cent. In both organizations services are rendered other than marketing and strict marketing costs are below the figures named.

Different European Climates.

As related to the commonly expressed idea that because walnuts do so well in the Southern California coast counties, they are unlikely to do very well elsewhere, the observations of Prof. Ralph Smith, the leading authority on walnut culture in California, are of interest. Prof. Smith recently spent a year in Europe studying walnut culture in all leading countries. There are three districts of marked importance in Europe and each has a different type of climate from the others, only one district having a climate resembling that of our Santa Barbara country. This is Sorrento, in southern Italy, where the finest nuts are grown, though less are produced there than in France.

In the Grenoble district of France there are cold winters, much more severe than in California, the soil also being inferior in quality. The trees are very slow of growth and slow to come into bearing, though they bear well for more than 100 years. The poor methods of handling and low prices have been spoken of.

The third district of importance is in southwestern France, some distance from Bordeaux, where the trees grow extremely large and bear well, though the quality of the nuts is not as good naturally as in the Grenoble district. In both districts the growers are nonprogressive and any material advance in the world's walnut production will apparently be made by California.

THE EIGHT-HOUR BILL

(Continued from Page Twelve.)

to go on, in agricultural industries at least, seems to be to let the Orientals form alleged partnerships and work all they want to, as we mentioned last month. It is possible, possibly it is, for a man to have a large enough family to attend to all emergency work, but why not quit farming and work for wages when one doesn't have to work more than eight hours, particularly when the world owes every man a living and the right to work at good wages is guaranteed to every man by law and the law also cuts down the high cost of living to pretty near nothing. In the words of the good old song, "Every day will be Sunday, in the sweet by and by."

It is a measly shame to have to use up all this good space on a matter that the public ought not to be threatened with, but there may be enough unthinking and unenlightened people in California to put this measure through without understanding its action and everybody certainly ought to do some missionary work to give this measure a good, deep burial. If the people really want an eight-hour law, let them get one, but kill this miserable excuse for legislation.

And if there is anybody who wants more enlightenment on the matter, please write to Arthur Dunn, secretary, Farmers' Protective League, Sacramento, and get some literature.

If anybody wants to help overcome the menace of this measure, let him do likewise. Some person may meditatively say, "I am convinced that there is at least merit in the idea, and perhaps I better support it for the ideal it carries." To such we say, "My friend, your ideals may be excellent, but your execution is faulty and your brain not very industrious. You are too good for this world, may you advance to a better one before next November, or take a little different way of putting your ideals into execution."

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.

Largest pipe works in the West.

WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

GAS ENGINE CYLINDER OIL

TRADE MARK REGISTERED 1873
VALVOLINE

FOR

TRACTORS AND CATERPILLARS

FORTY YEARS' EXPERIENCE AS REFINERS.

VALVOLINE OIL COMPANY

San Francisco. Los Angeles. Portland. Seattle.

Get Your Canadian Home from the Canadian Pacific

BUY an irrigated farm where you have insurance against drought and where you have just the moisture you need *when you need it*. You know the value of controlling the watering of your crops. In sunny Southern Alberta you are master of the moisture. The Canadian Pacific's great Irrigation Works *insure* your yield whenever rainfall is insufficient. Irrigation is not always a necessity—but it is yours at command. It means dependable crops, and wonderful crops every year. The Eastern section of the Canadian Pacific Irrigation Block East of Calgary is now open. Virgin soil of famous fertility—alfalfa, timothy and other fodders—raises all the grain and root crops, fine climate—great cattle country—good markets—unexcelled transportation.

We want the alert enterprising farmers who see this magnificent opportunity. So we make the most liberal terms. Take 20 years to pay. Call on us for long time loan of $2000 for farm improvements if you want it. Investigate now. This block will soon be the most densely populated and intensely cultivated district in the west.

You Can Have 20 Years to Pay

We will sell you this rich, irrigated, Canadian land for $35 to $75 an acre. You need pay only one-twentieth down. Think of it—only one-twentieth down, and then the balance in 19 equal annual payments. Long before your final payment comes due, your farm will have paid for itself over and over again. Many good farmers in Western Canada have paid for their farms with one crop. Here are some of the startling features of the most remarkable land offer you have ever read:

We Lend You $2,000 for Farm Improvements This offer of a loan up to $2,000 is for farm development only, with no other security than the land itself, and shows our confidence in the fertility of the soil and in your ability to make it produce prosperity for you and traffic for our lines. This loan will help you in providing buildings, fencing, sinking well and breaking, and you are given twenty years in which to fully repay this loan. While enjoying the use of this money, you pay interest at only 6%.

Advance Live Stock on Loan Basis The Company, in case of the approved land purchaser who is in a position and has the ability to take care of his stock, will advance cattle, sheep and hogs up to the value of $1,000 on the basis of the settler's note with interest at eight per cent, to enable him to develop more rapidly, on the right basis of mixed farming.

Farm Made Ready by Experts if Desired If you want a place already established, select one which our Department of Agricultural Experts has developed. On our improved farms, house and other buildings are up, well is dug, farm fenced, fields cultivated and in crop. All waiting for those who want an immediate start and quick results—all planned and completed by men who know—our own agricultural experts. Take twenty years to pay if you want to. We give *free* service—expert service—the valuable assistance of great demonstration farms, in charge of agricultural specialists employed by the Canadian Pacific for its own farms. This service is *yours*—free

Water Rental Will Not Exceed $1.25 per Acre And each water agreement will have the approval of the Dominion Government. You are doubly protected.

The Canadian Pacific offers you the finest land on earth for grain growing, cattle, hog, sheep and horse raising, dairying, poultry, vegetables and general mixed farming—irrigated lands for intensive farming. *Remember, these lands are located on or near established lines of railway, near established towns.* You can start on an irrigated farm, improved or unimproved.

Here is the Last Best West—where your opportunity lies. Don't delay. Mail the coupon here at once. The best land will be taken first—so time is precious to you. *Write today.*

R. S. THORNTON, Colonization Agent
Canadian Pacific Railway
Colonization Department
112 West Adams St., Chicago, Illinois

R. S. THORNTON, Colonization Agent,
Canadian Pacific Railway Co'onization Department, 112 W. Adams St., Chicago

Please send me your book of information on Irrigation Farming in Sunny Alberta.

Name .....

Address .....

Town .....

State .....

Answers for Farm Problems

WAYS WITH MILCH GOATS—Have been a reader of your magazine for some time and have gotten some very valuable information therefrom; in fact, I think it is the best agricultural journal published. I am desirous of some information on goats. I know the goat industry in this country is not very extensive, therefore I imagine information on this subject would be rather difficult to obtain, so naturally I look to "Orchard and Farm" for it. I would like to know if milch goats could be raised successfully for profit. If so, what kind of climate and land would be best adapted for them? Can you tell me what breed of goats would be most profitable to raise for the milk, and what the value of such goats are? Do you know of any successful goat ranches in this State on a paying basis? Is goat's milk superior to cow's milk? If so, why? Is there any argument against it? Any little information you can give me on this subject will be very much appreciated.—G. S. R., San Francisco.

Milch goats certainly can be and are successfully and profitably grown in California and there are a number of breeders who have high class animals. The milch goat business has been brought to an excellent basis, much superior to the old method of getting any goat that would give milk. There are plenty of scrub goats, but many of those going into the milch goat business have animals as much better than the scrubs as the best pure bred dairy cows are better than the scrub cows often seen. There are several breeds of great excellence established in America, the Toggenburg and Saanen being the most popular. Most of the milk production as yet, however, comes from grades obtained by using pure bred bucks on common does. A good doe could probably be purchased for about $12 to $20 and a pure bred buck for about $25. These figures are, however, largely guess work.

Goats' milk is considered much superior to cows' milk for infants' use, resembling more the mother's milk than does cows' milk. The goat is likewise practically immune to tuberculosis, and people inclined to be fearful of disease often favor it above cows' milk on that account. Goats' milk varies in richness, as is the case with cows' milk, but on the average it is a good deal richer than ordinary cows' milk. There is a different flavor to that of cows' milk, which might be considered a disadvantage. That is largely a matter of individual judgment. However, it can be taken as a fact that goats' milk will have a distinct market from that of cows' milk. It will be produced for infants and for others of delicate constitution, not for ordinary family trade, as is the case with cows. For regular family use it will be produced where accommodations are insufficient or unsatisfactory for keeping cows. The goat will usually not be kept on good, rich land and produce milk for general trade wl en cows can be used instead, though they might be used on that kind of land to produce milk for special trade.

Although good milch goats need excellent feed and plenty of it, the goat will feel happier if he, or she, can wander around a hill more or less and nibble at shrubs and grass. Such a location, with abundant good feed being given, is better for goats than a level corral of the type in which a dairy cow may be kept. The goat is not particular about climate, though too much dampness is to be avoided. The milch goat is already here and is on the advance.

SUFFOLK AND MULEFOOT HOGS—In a recent issue of Orchard and Farm you mention the Suffolk breed of hogs. Please tell me how to get in touch with someone who keeps Suffolk hogs. Also tell me something about Mulefoot hogs. Are they better than Chester White, Poland China and the other breeds you mention?—A. J. A., Elgin, Wash.

The Suffolk is an English breed of hogs and there are so few in America that there is not even a breed association, hence no direct way of getting in touch with any breeders, nor, since we have such excellent breeds of American hogs, is there any need to. The most common claim for the Mulefoot hog probably is that he is more resistant to cholera and other diseases than the other breeds. The correctness of the claim has not been determined, but it seems pretty certain that this breed is at least not immune to cholera. As a general thing it can be said that no breed is superior to the Poland China, Berkshire, Duroc Jersey and Chester White of O. I. C. hogs, unless a person wants a bacon rather than a lard hog, although other breeds, including the Hampshire, Mulefoot and others, may be equally as good and are considered by certain persons or under certain conditions superior to any of the four named. The four breeds named can, however, be considered the best for most conditions, if numbers are any proof. The Mulefoot hog is highly spoken of by its owners, which is true of practically every breed. Every breed given the attention merited gives fine results.

COMMERCIAL HOG METHODS—Can a person who understands how profitably raise hogs on a 20-acre farm? Of course, all this would not be set aside to the exclusive occupancy of the hogs, say 5 acres being used for other purposes, leaving 15 to the full use of hogs. Can hogs be profitably raised only on by-products, such, for example, as the skim milk from a dairy, etc.? This question presents itself from the fact that it is held by some that hogs should never be fed any food that would be eaten by a cow. This, of course, is equivalent to saying that hogs cannot be raised profitably unless as an adjunct to a dairy. The 20-acre farm is not what is understood as an irrigated farm, though some alfalfa may be raised thereon. Also, would an alfalfa farm be more desirable from every point of view? Could you mention the name and address of a successful hog raiser, not a breeder?—G. T. K., Oakland.

Hogs can be made the main product of a 20-acre farm of the right sort if the farmer knows the business, without doubt, but would consider alfalfa and irrigation almost an essential. Of course, if there were various amounts of hog feed from outside sources almost any kind of a ranch might be satisfactory. As a general rule, however, it would seem best to have hogs rather a secondary product of a ranch instead of the main product; to keep a few cows, or to raise fruit, melons, etc., and having the hogs secure a considerable portion of their food from what would otherwise be wasted. That is where the hog particularly shines and where his main value develops. It is apparent at a glance that it should cost a man less to raise a lot of hogs if much of their feed was just an incident to other kinds of production, than it would cost a farmer who raised or bought all feed particularly for the hogs. Most of the California hogs are raised thus as a secondary rather than a primary product. In fact, even when hogs are considered the important feature, it is common to keep a few dairy cows for the skim milk, though the cream will be worth much more than the milk, or to follow some such plan with something besides cows.

The question of by-products now naturally comes in. Yes, it might pay to raise hogs on by-products only, but usually it is pretty poor policy, though too common. If skim milk was considered of no particular value and would otherwise be wasted, it would be profitable to use it for hog feed, but it would be more profitable by far to feed some alfalfa, barley, milo maize, or other such product along with the skim milk than to feed skim milk alone. This talk of using all the alfalfa for dairy cows is all nonsense. The hogs would make better use of the skim milk by far on account of having some alfalfa, and still better by having grain of some kind too. The alfalfa needed with the milk would be worth more for them than for cows. Alfalfa is the cheapest food practically always, so, of course, every animal that it pays to keep should have some. And if it would be true that all alfalfa ought to be kept for the cows, under the idea that what food they could eat was better used than when given to the hogs, the cows should have the skim milk also, for the kind of nutriment in it is much more highly refined than that of alfalfa.

For the latter part of your question, skim milk is not a necessity for profitable hog raising, though excellent when available. Some of the finest hogs in California get little, if any, skim milk, but they do get grain and grain products as well as alfalfa. Hogs have been raised on alfalfa and alfalfa alone, as the main product of a ranch, but the plan is undesirable. Lots of alfalfa is highly desirable, but for the best success other things should be raised and fed. With a 20-acre alfalfa ranch, part being given to other things which would provide variety for hogs, hog raising can be considered very decidedly a commercial possibility. But as mentioned before, most hogs are raised as an adjunct to other kinds of farming, even when they are the most important. Likewise, practically all hog raisers whom we now recall with whom hogs are the main product and whose methods are of the kind to suit have worked in greater or less degree into a pure bred business. If you are after good examples, go to the pure bred man, he is sure to be the one to know the business best. We can give you the names of several convenient to you on request.

Will you kindly tell me what to do for my tomato plants? I have about four dozen fine plants in good soil. They have been blooming about three weeks, but the tomatoes do not set, as the blooms drop off after three or four days. Can you tell me the cause of this, and is there a remedy? The vines are irrigated well about once a week.—O. H. G., Redding.

Your fine irrigation is very evidently the cause of the trouble, for whenever tomato plants are given lots of water to keep them growing vigorously, htey are quite sure to drop their blossoms. Every year people ask about this and many more have the trouble without asking about it. Keep the water off the tomato plants and after the ground has dried out enough to let the plants sober down a bit the tomatoes are quite sure to set. Tomatoes do not want to actually suffer for water, but a positive rule should be always to slack up on moisture when the time came for fruit to set. Too rich soil may occasionally keep tomatoe plants growing, so that fruit will not form, but nine times out of ten too much water is the cause of such trouble as you have.

Dan Tucker, an Oklahoma negro boy of ten hot summers, draws only $190 a day from eighty rocky acres of oil land. Some benevolent old gentleman should place poor little Dan in a good school, where he can be taught how to make his farm pay a decent return.

TO
Sheep Breeders
and
Goat Breeders

The Shepherd's Journal is the talk of the sheep growing world, because of its beauty and wonderfully practical worth. Nothing like it published. Send for free sample copy to-day and be convinced. Address 309 Monadnock Bldg., Chicago, Ill.

OAKDALE IRRIGATED ACRES
Why not sell your high-priced land and buy fines irrigated lands in Stanislaus County on ten years time. 20-ACRE TRACTS—$250 DOWN—$25 YEARLY. Ideal for garden truck, alfalfa, fruit dairying, chickens, ample water to high point each tract. Only 2 miles City Oakdale, with 3 railroads, canneries, creamery, markets, high school, 2 banks, 2 newspapers, good roads, splendid climate. Success and increased value assured. Every buyer satisfied and making good. Circulars free.
C. H. LEHMAN, MARSH-STRONG BUILDING, LOS ANGELES.

PORTO RICAN STRAW HATS
Cool As a Drop of Dew

Hand-woven, soft, durable, comfortable. Good as Panama, but cooler, lighter, more stylish. Direct from maker to you, $1.50 postpaid, State size and send money order. Money refunded if not satisfactory. MARTIN LOPEZ & CO. Dept. 1005, San German, Porto Rico. References—Bank de Economias, San German.

KILMOL SQUIRLGOPHENE
WILL KILL 'EM ALL
Everything FOR SQUIRREL AND GOPHER Destruction
KILMOL SQUIRLGOPHENE
with U. S. Destructor, or Waste Ball Method, is 100% efficient.
KILMOL WILL KILL 'EM ALL
5-Gallon Tins, $6.00.
Waste Balls, 50c per hundred.
U. S. Government Poisoned Barley (New Formula), $8.50 for 100-pound drum — the old formula improved.
It is Different.
Gets the Foxy Old Squirrels.
Strychnine—5-oz. tins, 60c per ounce.
A postal will bring you valuable information. Write now—don't delay.
HERBERT F. DUGAN
Dept. K,
1170 Sutter Street,
San Francisco.

Answers for Farm Problems

GNAT REPELLANT.—Can you let me know whether there is any oil or other material that can be put on face and arms to keep gnats away? They are becoming very troublesome here.—Reader, Butte City.

We submitted this question to Prof. C. W. Woodworth, Entomologist of the University of California, who states:

There is no standard remedy for gnats, though there are a great many oils manufactured to place on the skin which are more or less effective in driving them away. Any neutral oil, like cottonseed oil, forms a good base in which is mixed some of the essential oils. Oil of citronella is commonly used, along with which may be included almost anything else, such as pennyroyal, camphor oil, etc.

AMOUNT OF WATER SUPPLIES.—I am looking into water conditions in that section of Yolo county near Esparto and Madison, and want to know something about the probabilities of this company being able to deliver the water for the ranchers in this vicinity. Can they deliver it when needed and in such quantities as desired? Where can I go to get the facts?—C. H. B., Oakland.

You show extremely good sense in going after this information, as in former years too much land has been sold with much less water than the buyers expected. Fortunately, conditions are very much better now and the buyer, with due observation and judgment, can be pretty sure of getting water when a water right is supposed to go with the land and the State owes it to itself and to the purchaser that expected water will be available. The Department of Irrigation at the University of California is in very close touch with such matters and we referred your question to them, receiving from Prof. B. A. Etcheverry, head of the department, the following reply:

"The land in Yolo county near Esparto and Madison is commanded by the irrigation system of the Yolo Water and Power Company. The water supply is obtained from Cache creek and the company has about completed its storage dam at Clear Lake. With the use of stored water at this lake the company will have an abundant supply. I would suggest that you write to Mr. Willis Pike, commercial manager of the Yolo Water & Power Company, at Woodland, Cal., who can give you all the other information you desire."

Aside from the matter of irrigation, would state that a little expert advice on land by a reliable authority may easily be worth far more than you would pay for it. Only an experienced farmer or engineer who knows conditions can know what to look for on land and find it after he has looked for it. Digging a hole six feet deep, for example, might be worth thousands of dollars and half a dozen years of a man's life in the purchase of a piece of property on which to make his home.

PEACH ON MYROBALAN.—I wish to plant cling peaches on some adobe underlaid by yellow clay and would like to know whether the Myrobalan would be a satisfactory root for such conditions?—E. J. W., Sutter county.

The Myrobalan has been used to a limited extent as a root for the peach, but does not give very good satisfaction and is used less now than ever before, so it is improbable that the peach could be planted on land not naturally adapted to it by this means. If anyone has had success with the Myrobalan in similar conditions, we would be glad to learn of it. The best soil for the peach is a deep, rich, well drained loam. On level land, or elsewhere, a short distance to water is to be avoided, which you will likely have on occasions. It is a very good rule to go by in California fruit production not to plant fruit on any land or soil not excellently adapted to the fruit in question.

SPEED OF CENTRIFUGAL PUMP.—I have seen two articles in your valuable paper which I have taken great interest in, in hopes of seeing something in regard to the speed of centrifugal pumps in relation to the amount of water pumped. For instance, I have a pumping plant with 15-horsepower engine and No. 5 centrifugal pump—20 feet to water. The well lowers 18 to 20 feet while pumping. On first turnout on top of ground I get about 65 miner's inches of water, and on next turnout, 10 feet higher, I do not get nearly so much water unless I speed up the engine to where it heats badly. Why this difference and how can it be overcome? What size pulleys should I have on the engine and pump and how fast should I run my engine for best results?—E. G. T., Corona.

Answer by Prof. B. A. Etcheverry, Department of Irrigation, University of California.

I cannot give you a definite answer without knowing the make of engine you are using. Usually a No. 5 centrifugal pump will require for a total lift of 40 feet about a 14 or 15 horse-power engine. If the lift is increased 10 feet more by delivering at the upper turnout you mention, it would require 17 horse-power, so your trouble in overheating is probably due to the fact that your engine is not large enough for the upper lift.

Regarding the proper speed at which the pump should be operated, this will depend on the make of the pump. You could perhaps obtain this from the pump manufacturer. Knowing this and also the speed of the engine, then the pulleys must be proportioned accordingly. If you will give me the additional information, I may be able to give you more definite advice.

IMPERIAL VALLEY LAND.—Would you please tell me if there is any public land drawing in the Imperial valley this year? If so, how would I go about drawing for it?—T. C., Perris.

The only land that is fit to use in the Imperial Valley is that with a water right. Would advise you to communicate with the Imperial Valley Chamber of Commerce, El Centro, regarding purchase of same. Naturally, when canal has brought water over property it is not on same basis as ordinary Government land. However, we have no definite knowledge of actual legal status of unimproved land, but know that there are great amounts with water either available or soon to be available and the prices are very moderate considering financial possibilities. The Chamber of Commerce can tell you more about the subject than we can. There is or was, some Government land open to entry adjoining canals, but on upper side, new owners expecting to pump from canals. You can find about this, perhaps, from United States General Land Office, San Francisco, but would advise going down personallly to make your own selection on land under the ditch in regular way. People trying for a short cut to property often lose more than they gain and values on new land in the valley are as low as one would ask anyway.

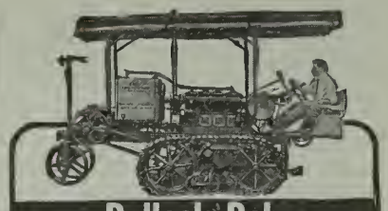
HOW TO KILL GOPHERS—I have an alfalfa patch that the gophers are almost ruining. Is there anything that you know of or could suggest that would exterminate them?—E. D., Napa, Cal.

Flooding the land in irrigation usually kills a great portion of the gophers. You will also get very good results by using kilmol, sold by Herbert F, Dugan, Dept. K, 1170 Sutter st., San Francisco, or the carbon bisulphide cartridges sold by Newton's California Fireworks Co., San Francisco. This was told in our May issue in the article, "How Uncle Sam Kills Squirrels."

In our April issue we have an article upon poisoning squirrels by E. A. Marris, Sebastopol. We believe by the use of poisonous fumes or by poison itself you can clean up the gophers pretty well.

My orchard of prunes, pears and apples, which we planted in March, is being attacked by cutworms. The leaves of the prune trees are gone and the worms are starting on the apple trees. What shall I do to prevent further damage by the worms? Will the trees whose leaves have been destroyed die? They are not dead yet.—C. M. S., Santa Rosa.

Your trees will come out all right if the new growth is protected from further damage. The best method of controlling the cutworms is probably by the use of poison. Thoroughly mix one-quarter pound of Paris green in five gallons of water and dip in cabbage or lettuce leaves, or some other green stuff of which the worms are fond and leave same at foot of the trees in late afternoon. The worms stay in the ground during the day, coming out in evening to ascend trees and feed on leaves. On emerging they will eat cabbage and be poisoned. Tree tanglefoot or other sticky substance applied to trunk of trees will also prevent their ascending. Cotton batting tied on in fluffy bands also helps some times, though usuallly some worms can get over it.



Bullock Baby Creeping Grip Tractor

Another notable achievement of the Bullock Tractor Co. Pronounced by expert agriculturists the ideal type and size tractor for small farms. Its low price, adaptability to do every kind of traction work and its low cost of operation makes it quick and big profit-maker on farms even as small as 160 acres.

One important feature of this tractor is that it steers with the creepers at the same time with the front wheels, permitting short turns and operating close into fence corners; the machine can turn within its own length.

Interesting literature describing the Bullock Baby 20-20 H.P.—also 3 larger sizes with prices sent on request. Address

BULLOCK TRACTOR CO.
1807 Diversey Parkway, Chicago

Works Easy On Any Job

Especially Adapted for Small Farms and Orchard Plowing.

Get Prices

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted **FREE**
Watson E. Coleman, Patent Lawyer, Wash., D. C.

Make Your Orchard Pay

Save the moisture. It means more and better fruit. Keep the ground cultivated without packing it down as fast as you stir it up. The only power that will do this *right* is the Baby Caterpillar. It does not pack the soil nor spoil the mulch around the trees. The long, wide Caterpillar tracks distribute the weight over more than 1,300 square inches. That makes about 7 pounds' pressure to the square inch—less than that of a horse or a man of 170 pounds' weight.

CATERPILLAR

Reg. U.S. Pat. Off.

The Caterpillar handles easily, turns short from one row into the next and works close up to fences and corners. Without the canopy it is only 58 inches high—you can cultivate right up under the trees without injuring the branches.

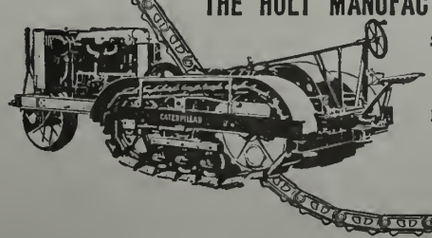
The Baby Caterpillar is *guaranteed* to do the work of 14 average horses. It has plenty of power for plowing and for hauling fruit and other produce to market. The Caterpillar tracks let no energy go to waste in slipping. They deliver more horsepower from the motor to the draw-bar than round-wheel tractors possibly can, especially in soft or wet ground.

By means of the stationary power attachment, you can use the Baby Caterpillar for threshing, sawing, pumping, grinding feed or for any belt work. The Caterpillar is a practical, all-round tractor that can be adapted to dozens of uses on your ranch. Economical of fuel, easy to operate, cheap to maintain. You ought to know about the Baby Caterpillar because of the dollars and cents it will save you if you are still working with horses.

Ask our nearest branch for catalog F. 53, which will give you full information.

Everything for the power farmer—harvesters, disc and moldboard plows, harrows, scrapers, supplies and lubricants.

THE HOLT MANUFACTURING COMPANY, INC.



Stockton, Cal.
San Francisco, Cal.
Los Angeles, Cal.
Spokane, Wash.
Portland, Ore.
Peoria, Ill.
New York, N. Y.

ORCHARD and FARM
ESTABLISHED 1888
IRRIGATION

VOL. 26 JULY, 1914 NO. 7

Issued Monthly at Hearst Building, San Francisco, Cal.
Country Life Publishing Co., Publishers
D. J. Whitney ----------Editor

SUBSCRIPTION RATES
One year, domestic postage paid----50c

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

MONTHLY COMMENT

To all our readers and to all our possible readers, "Orchard and Farm" from this time on is 50 cents a year, or $1 for three years. Subscribers may possibly feel somewhat pleased to save $2 in three years by the reduction in price, though $2 in three years is little when a paper is concerned that is a necessity to one's business, but time counts as well as money, and it will be a pleasure to know that by sending a one-dollar check or money order no more time or money will be required for three years. "Orchard and Farm" will be saved expense in bookkeeping, because when a dollar comes in there will be nothing but mailing to attend to for three years as a rule, for $1 rather than 50 cents seems to be the favorite subscription price since the reduction was offered. Our gain of course comes from the increased circulation, as this reduction is but a standardization to the price of practically all agricultural papers of good standing. To readers who know the value of "Orchard and Farm" the higher price was not of great importance, but it did cut a figure with those unfamiliar with the paper. At a price comparable to that of other farm journals all live persons interested and engaged in agriculture will be willing to consider it and we are willing to let it make its way after its first introduction on its merits. Would it be asking too much of our readers, if they really believe that the "Orchard and Farm" is a journal of substantial merit, to mention the new price to others who might need the paper and have them write for a sample copy or otherwise examine it?

We believe that "Orchard and Farm" is setting a standard of excellence for agricultural work that is hard to surpass and that belief appears to be growing over the State You will notice one compliment on our Farm Problem page. Another inquirer writes:

"I am a subscriber to your paper only recently, but think it the best of its kind. I wish it came oftener."

And there are others who have written to the same effect. It is impossible that everything be "the best of its kind," and there is always something possible better than has ever been before. "Orchard and Farm" may be setting a great pace, but it will be better in the future than it has been in the past or is now.

To our mind the most important thing in the paper this month is the article by the State Veterinarian, Dr. Chas. Keane, on the control of hog cholera. Farmers might as well recognize the facts as they exist, that hog cholera must be and can be checked, and for a method of checking it the plan outlined by Dr. Keane, which is doubly valuable because it is already in operation, is the most reasonable and sensible thing that one could come across. Despite the advance in medical science the public would with on accord rise in protest if any public man would advocate giving up all quarantine measures and letting up on the sanitary work that distinguishes our civilization. It is just as bad, only much less important, to ignore entirely quarantine and sanitation in the fight against hog cholera. It is perfectly true that serum is a wonderful thing and it was a wonderful discovery, but it is folly to rely wholly upon it. And just as true as the fact that good sanitation can only be effected by public means, so it is true that hog sanitation is only truly effective by the same means, and swine breeders' organizations furnish the only public tool to accomplish that end. And there is a value in farmers' organization, so much so that it is said that the coming of the boll weevil was a blessing to the South, for it made the farmers get together. The formation of farmers' clubs to fight cholera would be to the credit of the cholera if there really could be any good thing about it. Nearly every purebred hog raiser in California has found such a demand for his hogs this year that he is sold out, or nearly so, which is extremely promising for the future of the industry, but it will not be very pleasant if the cholera spoils all that good work, it it has handicapped the industry thus far.

We all know that carload after carload of hogs and pork is coming to California every week, simply because sufficient hogs are not raised here, in a State abundantly favored by nature for pork production. Cholera is responsible for our moderate production. We know that alfalfa is a drug on the market because there is not the stock to eat it up. Two dry years cut down livestock numbers and reproduction is slow for nearly all kinds of stock, but not for swine. Cattle and sheep give but one at a birth, perhaps two, when it comes to sheep. Sows can produce two large litters a year, and the gilts can produce young also in no great time. We have the alfalfa, we have not the stock, and swine are a kind of stock that can increase or decrease quickly to correspond with the feed. Needing something to eat the alfalfa, with California using far more pork than is here produced, and with cholera the one great backset to pork production, is it not true that this programme advocated for county sanitation and quarantine against hog cholera is one of the most important matters that could appear in this paper at any time?

There is given in this issue a great deal of material from the Fruit Growers' Convention at the University Farm early in June. It is almost too bad that the paper for a year round could not contain material from this convention, which came nearer being just what it was reasonable to hope and expect it to be than any convention thus far. Nowhere except at the University Farm could a convention of this size and nature be held, but as we understand it, the policy of the convention will be followed as far as possible in future gatherings. That is, to a certain extent there will be meetings particularly for persons interested in some certain subject to discuss it to their heart's content. It is unlikely that the attendance will ever be what it should be at such a convention, but the reputation of the last should attract double the crowd if another such convention is held again. The State Commission of Horticulture is handicapped in not having the funds to publish the proceedings of the convention. It would, indeed, be a task to do this, owing to the duration of the convention and the facts that many meetings were being held simultaneously. The good things of the convention will, however, be spread abroad by those that came, and in other ways and will not be lost. A number of them, it can be seen, are given here. And, incidentally, if any one wishes reports of several previous conventions, copies can be obtained by application to the State Commissioner of Horticulture, Sacramento, many copies being on hand that are too valuable to be lost. They would do for reading winter nights, it not read now.

There is an old saying: "A man is either his own doctor or a fool at thirty years." There is a good deal of truth in this, for if a person don't know how to keep well at that age he is pretty near hopeless. At the same time the people that are all the time being their own doctor or all the time taking medicine, whether they are fifteen, thirty or three score and ten, are likely to be considerable fools in the bargain, according to our observation. They are, in fact, as bad as persons who are all the time running to a doctor on every excuse, or no excuse at all. All of which relates to the topic before our household exchange this month. If, by suggesting simple remedies, sensibly applied, the department this month can overcome various ailments and make persons to that extent their own doctor, it will do well, for simple remedies often are superior to the highly artificial remedies of modern medicine. If, on the other hand, they encourage all sorts of tinkering with skin and digestion and suggest ailments so that the patient can have the pleasure of trying the cure, better by far that they never had been printed. Some of the suggestions look rather risky in fact—as if they might have been handed down from time when home remedies were developed more from superstition than sense We sidestep all possible responsibility and let everybody try the suggestions at their own risk. May none of them ever be necessary.

Both last month and this, and in fact every month, there will be found in "Orchard and Farm" some extremely important material regarding the Panama-Pacic International Exposition. The articles prepared with special care for this issue by Chiefs Lively and Graham of the Livestock Department deserve particular attention. This exposition is not a means merely for having a good time. It is more than anything else a method for benefiting every country concerned and every person attending. California as host is under obligation to make the Exposition the biggest success possible, and incidentally California will learn and benefit most of all from the Exposition. Some valuable information on things to he done and Exposition advantages given by Chiefs Lively and Graham will interest all who look at our two center pages and do much for the Exposition. The matter of the county exhibits is of particular importance.

As was fully to be expected, there has been no retraction by Dr. Carleton H. Parker, secretary of the State Commission on Immigration and Housing, for the totally false report rendered to Governor Johnson on the I. W. W. riots at Wheatland, shown up in our last issue. The claim likewise herein made that this report would naturally encourage the I. W. W.s in their attack on California agriculture has been substantiated by the successful attempt to destroy property of the Dursts by the I. W. W.s. This is in spite of the fact that the Dursts have been heartily praised by the Commission and everybody else for the excellent accommodations being provided for pickers this coming season. Meanwhile our charges against Dr. Parker for his report have been ignored with as much dignity as possible. Their correctness and the correctness of the report can be judged by the folowing:

In the report Dr. Parker states: "Taking the bonus for forfeitures of previous years as a standard, the bonuses accruing to Durst through the leaving of discontented workers must have been $100 to $150 per day."

The forfeitures for 1912, the season preceding the riot, were $28.70 per day and were typical of the previous years. The whole honesty of purpose, the whole acuracy of statement of this official report can be judged by these two sets of figures. Who is right, Parker or the "Orchard and Farm?" $100 to $150 per day" as against $28.70, not one cent of which need have been forfeited if the pickers had been willing to work steadily. What more need be said? What could there possibly be to say?

And now to close with the most important thing of all, the proposed Universal Eight Hour Law, up for public vote next November. A matter this is, not merely of individual opinion as to policy, like the tariff, the single tax, prohibition or any other political question of greater or less importance. It is a matter of almost life and death to California agriculture. Heretical as it may sound, it might be permissible in great emergency to ignore a law that the Legislature passed, if it was seen when put into effect to be wildly idiotic. This will be a law, if passed, that the sovereign people themselves passed, which, crazy, injurious, disastrous as it might prove, could not be ignored, not be disobeyed and not repealed for two full years, then, according to our constitution, still kept in effect by a small minority of enthusiasts. A bill passed by the Legislature, provided it has been important enough to attract attention, has had the merit of being vigorously opposed by some person who has shown up all the weak points at all apparent and secured the amendment of those weak points. This bill has had no sanitary overhauling by persons skilled in legislative matters and seeking for flaws, it has gone on the ballot prepared by enthusiasts alone, arbitrary, revolutionary. The only time it did come before the Legislature, and a very "progressive" Legislature, too, it was considered too wild, too foolish to justify using up valuable time on its discussion. Believe in an eight-hour law of some kind if you will, is this the kind of an eight-hour law to support? Not only object to the bill itself, but be a good citizen by giving your neighbor knowledge that will justify the democracy that America for a century and a quarter has been so proud of.

FARMERS' SHORT COURSES

The University of California has announced the short courses to be held at the University Farm at Davis, from October 5 to November 14, and all interested may obtain copy of announcement by writing to the Farm or to the University at Berkeley. The courses will include both lectures and practical exercises. Altogether there are to be 293 lectures and 258 practical exercises. Only ahout a third of them can be taken by one person in any one year.

The four courses offered are agriculture, horticulture, poultry, husbandry and dairy manufacture. The course in agriculture includes what was formerly under the three heads of general agriculture, dairy husbandry and livestock production.

There are no entrance examinations and no restrictions as to sex, but applicants must be at least 18 years of age. A registration fee of $2 is charged, also a deposit of $3 for milk testing to cover breakage for those taking that course. Board may be secured for $5 per week and rooms for $6 to $10 per month. Special rates are offered by railroads.

Since these short courses were established in 1908, 779 persons have enrolled. Great benefit has resulted to those attending and the courses are greatly increasing in popularity If there is the slightest opportunity for attending a person should get a copy of the announcement and decide to make every effort to attend.

Cement Lining for Separator House

One of the things most emphasized by the State Dairy Bureau is the separator house, a plan of one 8 feet 10 inches wide; 9 feet 10 inches long, and 8 feet 1 inch to ceiling, specifications being given in the last published report of the bureau. This report can be secured by writing to the State Dairy Bureau, San Francisco. From both the standpoint of sanitation and labor it is very good to have the walls of such a house smooth and water proof, so that they can be hosed off and made thoroughly clean with little trouble and will not be injured by the moisture, nor hold dirt.

A Marin County Milk House.

Cement lined walls give an excellent finish and these are frequently advised by F. W. Andreasen, secretary of the bureau. The composition and instructions for applying this lining are given by one of the leading agricultural engineers of San Francisco and advised by Secretary Andreasen as follows:

First put in extra studding or uprights and ceiling joists so that none of them will be more than 16 inches apart in centers. Use 1¼-inch Oregon pine laths, free from bark and other defects. Space the laths ⅜ inches apart and nail them well to every stud and joist. Break the joints every eighth lath.

After the laths are in place and before the plastering is to be done, the laths must be thoroughly wetted. The laths must not be dripping wet when the mortar is to be applied, but must be so damp that they will not absorb any of the moisture from the cement mortar. As dry wood quickly absorbs the moisture which should be held in the mortar, the mortar is weakened and sometimes ruined by failure to wet the laths before the mortar is applied. It is more satisfactory to have an experienced plasterer do this kind of work, although a little practice on a sample lath panel set in an upright position will enable one to do a fairly good job.

To apply a total thickness of ¾ inch of mortar to a separator building of the size spoken of above will require approximately the following materials: 600 Oregon pine, 1¼ in. laths, 6 pounds of lath nails, 14 sacks Portland cement, 1½ sacks prepared hydrated lime, 30 cubic feet of clean coarse sand and 3 pounds hair or fiber.

The first or scratch coat shall be ⅜ inch thick and shall be in the following proportions: 4½ parts Portland cement, ½ part prepared hydrated lime and 10 parts clean coarse sand.

For this building the first coat will require of the total amount estimated above, about 7 sacks of cement, ¾ sack of the hydrated lime, 15 cubic feet of the sand and the 3 pounds of hair or fibre.

Thoroughly mix the cement, hydrated lime, sand and the hair or fibre, while all of the materials are dry, and never mix the cement and lime with sand that is wet or moist. When you are ready to begin to plaster wet as much of the mixture as you can apply in, say, 30 minutes. If you are not accustomed to work cement, you should not risk wet mixing too much of it, in the beginning, for the cement sets quickly and must be applied to the wall or ceiling before it sets. By practicing first with the sample lath panel you will find just how much water to add and yet have the mortar wet enough to work without dripping off the wall.

The first coat must be scratched or roughened up with the edge of the trowel so that the second coat can have a better hold. Do not trowel the first coat to a smooth finish.

The second coat will be ⅜ inch thick and will take the balance of the material heretofore mentioned, no fibre or hair being used. The proportions will be the same as stated for the first coat. This coat will be so troweled that the surface will be smooth. If possible, finish the corners with roundings or coves which are more easily cleaned than sharp corners.

AGRICULTURAL ALUMNI ASSOCIATION.

A temporary organization for persons engaged in agriculture who have had a college training was formed at Davis during the Fruit Growers' Convention, and steps are being obtained to have those eligible and desiring membership send in their names. The object of the organization is to promote the interests of scientific agriculture in California and work together in those ways toward which their common interests lead. All persons are eligible who have had two years or more of college training.

Dean H. E. Van Norman of the University Farm School at Davis is acting as secretary and gathering a list of those desiring membership, so all who wish to join are requested to communicate with him, or with one of the following committee: George P. Weldon, Deputy State Horticultural Commissioner, Sacramento; H. H. Ainsworth, Mountain View; H. A. Clarke, Saratoga; R. S. Vail, Santa Paula; D. J. Whitney, Hearst Building, San Francisco. A more complete organization will be formed at some convenient time after a good membership list is obtained. It is not necessary to have attended an agricultural college, as persons taking up other kinds of college work but having agricultural interests at this time are on the same basis as those from agricultural colleges. The organization can do a big work for California agriculture and prove of high value to the members.

EVERYDAY EPIGRAMS.

You've got to think before you accomplish anything.

Nothing is easier than fault-finding—but don't do it!

It is useless to lock the stable after the horse is stolen.

An emotion turned inward gnaws at the soul.

Each failure should be a stepping stone to success.

THE MULE.

The mule, he is a funny signt,
He's made of ears and dynamite,
His heels is full of bricks and springs,
Tornadoes, battering rams and things.
He's fat as any poisoned pup;
It's jest his meanness swells him up;
He's always scheming 'round to do
The things you most don't want him to.

The mule, he lives on anything;
He's got a lovely voice to sing,
And when he lets it loose at noon,
It sounds like buzz saws out of tune.
He stands around with sleepy eye
And looks as if he'd like to die,
But when there's any dying done,
It ain't the mule, I'll bet a bun.

Some folks don't treat mules with respect,
They say they ain't got intellect;
That may be so, but if you've got
To go to Heaven on the spot,
And want a way that doesn't fail,
Just pull the tassel on his tail.
The mule, he tends to his own biz;
He don't look loaded, but he is.

—George Fitch.

HOGS ON WHEAT STUBBLE.

It is frequently supposed that the combined harvester and thrasher will leave so little grain in the field, especially on level ground, that there is nothing to be gained by gleaning the stubble with hogs. It is also supposed that in gleaning a large stubble field hogs will do so much traveling that they make no gains. To show that neither of these assumptions is well founded, the experience of W. H. Steen, Umatilla county, Ore., in gleaning the stubble field with hogs is given in a bulletin of the United States Department of Agriculture.

On August 24, 1910, 90 head of hogs, weighing 6,261 pounds, were turned into 178 acres of wheat stubble. They were in the field without other feed until November 1, when they weighed 8,350 pounds. The gain in live weight per acre was 11.73 pounds. The value of the gain per acre (11.73 pounds) at 6, 7 and 8 cents per pound amounts to 70.4, 82.1 and 93.8 cents, respectively. The stubble land gleaned by the hogs is comparatively level, and a good job had been done in cutting the grain with a combined harvester. On steep land the waste in harvesting is always much greater than on level land, and the gain in gleaning the stubble with hogs should be correspondingly greater.

Persistent effort in the right direction never goes unrewarded.

Lock Seamed

Simple construction is *necessary* in irrigation pipe. Simplicity means strength.

Ames-Irvin Irrigation Pipe

is constructed without solder or rivets. Nothing but the sheet of metal itself is used. Each sheet is edged, locked together and then set down under 3500 pounds pressure. Special machinery does the work.

When finished the seam is simple, solid and strong. There are no rivet holes in the steel—it can't leak.

Ames-Irvin lock-seamed irrigation pipe won first prizes against all competitors at the Sacramento state fair in 1913 and at the Fresno and San Jose county fairs in 1912.

Send for Booklet O. F.

It tells all about irrigation pipe and its construction. After reading it your judgment will tell you which to buy. Get it—today.

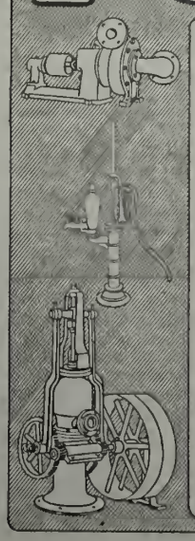
Ames-Irvin Company

8th and Irwin Sts. San Francisco

Wedding Invitations and Announcements
Engraved stationery for all occasions. High class letterhead and pamphlet printing and designing. Write for samples and prices.
FRED W. KNIGHT & CO.
Opposite the Palace Hotel, San Francisco.

When answering advertisements, please mention "Orchard and Farm."

PUMPS



Whatever kind of a pump you need—we have it. Handling all styles of pumps we are not obliged to urge any one type on you, but are in a position to help you select the pump best adapted to your particular requirements. We manufacture and sell

Horizontal Centrifugal Pumps
Vertical Centrifugal Pumps
Deep Well Pumps, Power Heads
Windmill Pumps, House Pumps

Illustrated are three of the many different styles. Don't decide on a pump till you put your needs up to our Pump Specialists. Their advice and suggestions will cost you nothing.
WRITE TO US and state your requirements—by guiding you to a right selection we can probably save you both money and trouble.
FREE CATALOG 28-B describes Bean Horizontal and Vertical Centrifugal Pumps.
FREE CATALOG 28-D describes all other pumps; also Bean Distillate Engines.
A postal will bring either or both by return mail.

BEAN SPRAY PUMP CO.
22 West Julian St. San Jose, Cal.

Livestock at the Panama Pacific Exposition

By D. O. Lively, Chief Department of Livestock

It is intended that the Department of Livestock of the Panama-Pacific International Exposition will mark an epoch in livestock show giving which will leave its influence on all events of similar character, extending from the county fair upwards. There is no more valuable human endeavor than to collect for comparison under competitive conditions the livestock of community or country. The lessons that are derived therefrom result in an immediate stimulus, not only to increase but to better production. Livestock show giving, however, has shown a tendency to appeal only to what may be termed the profession, being characterized more by contests for prize money than by their educational influence on the layman or beginner. In order to bring out specimens of the best in breed and fancy, the prize list is a primal necessity and the result is necessarly governed by the quantity of prizes offered.

Differing from exhibits of "still" life, animals and poultry are liable to damage and total loss from numerous causes. Also differing from "still" exhibits, they must be fed and cared for at great expense. Therefore, "live" exhibits are entitled to cash premiums instead of medals and trophies; but if the management of livestock shows overlooks the interest that is displyed in animate things by the people at large, together with the immeasurable educational opportunities that go therewith, such shows are not up to the measure of their possibilities.

In shaping the policy of the Department of Livestock of the Panama-Pacific International Exposition, first consideration was given to building up a prize list that would attract the best in the breed and fancy from this and other countries. That a fair amount of success attended is shown by the $175,000 in cash offered by the Directorate of the Exposition. To this there has been added approximately $85,000 by the breed record associations and clubs representing the breed and fancy in this and other countries. The Exposition prize money was divided as follows:

Horses	$50,000
Cattle	$50,000
Sheep	$25,000
Swine	$25,000
Poultry, pigeons and pet stock	$12,500
Dog and cats	$ 5,000
Carloads of cattle, sheep and swine	$7,500

Appropriations made by the associations are as follows:

American Aberdeen-Angus Breeders' Association	$ 6,000
American Ayrshire Association (for view herd expense)	2,000
American Guernsey Cattle Club (for view herd and supplemental premiums)	10,500
American Hereford Cattle Breeders' Association (minimum)	3,000
American Short-Horn Assn.	5,000
Red Polled Cattle Club	2,500
American Holstein-Friesian Association	7,500
American Galloway Breeders' Association	2,000
American Assn. of Importers and Breeders of Belgian Draft Horses (minimum)	2,000
Belgian Draft Horse Society (Belgium)	5,000
American Shire Horse Assn.	1,500
American Shetland Pony Club (minimum)	500
American Trotting Register Association	1,000
American Saddle Horse Breeders' Association	250
Percheron Society of America	3,000
Societe Hippique Percheronne de France (objects of art, estimated total value)	10,000
Morgan Horse Club (silver cup, value)	250
Hunters' Improvement and Breeding Society (England; two gold medals, value)	500
Standard Jack and Jennet Registry	350
National Pony Society (England; two silver medals, two bronze medals, estimated value)	300
American and Delaine Merino Record Association	500
American Cheviot Sheep Assn.	150
American Cotswold Registry Association	500
American Hampshire Sheep Breeders' Association	1,000
American Oxford Down Assn.	1,000
American Rambouillet Sheep Breeders' Association	2,000
American Shropshire Registry Association	500
Continental Dorset Club	500
National Lincoln Sheep Breeders' Association	500
American Angora Goat Assn.	400
Standard Milch Goat Breeders' Association	250
American Berkshire Association	2,000
American Duroc-Jersey Swine Breeders' Association	1,500
American Hampshire Swine Record Association	3,000
American Poland China Record	3,600
American Tamworth Swine Record Association	500
American Yorkshire Club	500
Chester White Swine Record Association and O. I. C. (cash and trophies	3,400
National Duroc-Jersey Swine Breeders' Association	1,500
National Dog Breeders' Assn.	500

There are numerous trophies by associations representing horses and by poultry clubs. It will be seen from the foregoing that the prize list feature has been abundantly cared for. A number of associations have not yet taken action, but have signified their intention of doing so.

The educational feature of the Department of Livestock, aside from the lessons that will be derived during the competitive period extending from September 23 until December 3, will be taken care of by view herds and flocks, commencing with the opening of the Exposition and carried over into the competitive period.

It has been demonstrated that the livestock department of expositions attracts the most visitors. Heretofore only those who were in attendance during the time of the battle of the breeds were given an opportunity of studying type or usefulness of the various breeds and fancies represented in the department of livestock. At the Panama-Pacific International Exposition every visitor who comes will be given the facility to devote as much time and thought as he wishes to the various characteristics of the entire livestock classification.

GEO FRASER PHOTO

D. O. Lively, Chief Department of Livestock, P. P. I. E.

It has taken a tremendous amount of effort and diligent work to secure consideration of the view herd plan. Assocations have not had a precedent for the expenditure of money necessary for the provision of such an exhibit. They realize the fact that splendid opportunities are afforded for the propagation of the interest of the breed by having them on display before as many people as will come to such an exposition as ours, but it has been difficult to secure co-operation in the giving of a non-competitive showing of typical specimens of the breed and fancy. It is gratifying to be able to say that the ice has been broken and provisions are being liberally made to maintain at San Francisco view herds, flocks and pens of the best in practically every section of the Department of Livestock. There is much work yet to be done. When the annual meetings of 1914 shall have finished their labor, it is hoped that few will be conspicuous by reason of their refusal to take part in the purely educational features of the livestock show at San Francisco in 1915.

Realizing its opportunities for further usefulness, the Department of Livestock at the Panama-Pacific International Exposition has prepared a number of special activities which appeal to the sportsmanship of civilized mankind. These special activities begin with benching dogs that take part in the national field trials, an event which will take place in Southern California. After the completion of the event, which requires much open territory, the dogs will be brought to San Francisco to be awarded their prizes and will be benched in the Department of Livestock.

Following this will come a universal polo tournament, which already gives assurance of being the greatest sporting event of its character the world has seen.

Immediately following the tournament will be mounted military competitions between representatives of the cavalry of this and other nations.

Shortly after this will take place the first of the great race meetings for the greatest amount of money in stakes and purses that has ever been hung up in the world. In regular sequence there will thereafter be what is commonly termed a society horse show, at which there will be demonstrated the fact that mankind's love for the beautiful and useful in horseflesh has not abated. The second half of the great race meeting will then take place.

Prior to that there will have been held a sheep shearing contest, a part of which will be a demonstration of the proper methods of sorting and grading wool. If this lesson will be properly absorbed by the wool growers of America, it will add from five million to seven million dollars to the annual wool output of this country.

Sheep dog trials, demonstrating the intelligence and usefulness of these friends of mankind, will attract much attention and entries from a number of countries.

Of course, the competitions between the breeds throughout the department are events of high-class sportsmanship, for in addition to the prize money there is the joy of winning and the satisfaction that goes with owning the best.

As a culminating event there will be a showing of children's pets to which every child will be asked to contribute. The influence of the ownership of pets on the character of childhood cannot be overestimated and the purpose of this show will be to further develop a love of pets, which means the growth of traits of kindliness and unselfish consideration.

A great many conventions will come to San Francisco incident to the things that are represented in the Department of Livestock. The American National Livestock Association will lead off, and its sessions will be followed by gatherings and meetings of men and women representing practically every breed that is included in the classification of this department.

In the arrangement of buildings, in the convenience of exhibitors and exhibits and in providing facilities for seeing the livestock exhibits, this department has outlined plans, the result of many years of study, that will be a step in advance of anything before undertaken.

How the Exposition Will Help California

By I. D. Graham, Assistant Chief Department of Livestock

The Panama-Pacific International Exposition will be the show window of the world. It will be the nations of earth on display. It will show mankind as it is and not as it has been, and it will take stock of things in the doing and not of things that were done.

It will be unique in that it will be the only great exposition to be held coincident with the event which it celebrates; the first to be held on the Pacific Coast area of the world; the first to be built without governmental aid; the first to be devoted entirely to man's contemporary accomplishment and the first to hold a continuous livestock show during its entire period. This exposition will celebrate one of the world's greatest engineering feats in the building of the Panama canal, and another in its own construction. It will unite the races and types of men in a great world university of object teaching where the things of to-day and tomorrow are studied and those of yesterday have but small space. Its dominent motif is education and its teachers the millions of exhibits as well as the people who made them.

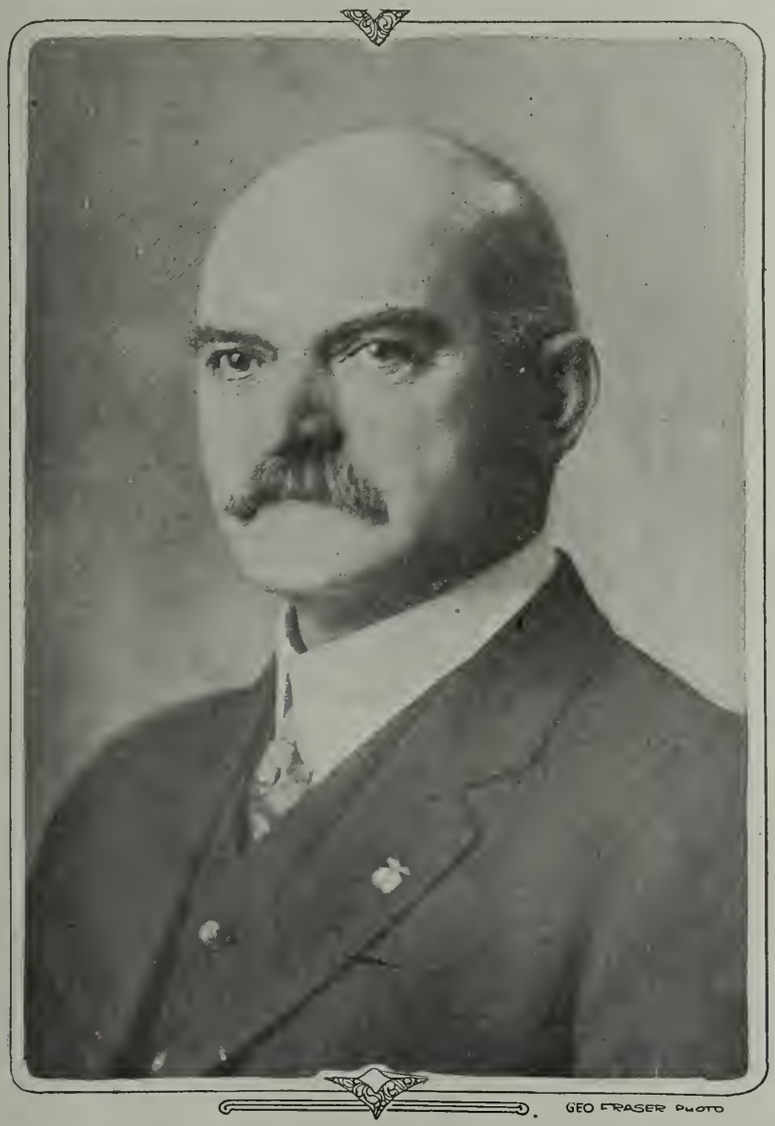
The immediate value of the exposition to agriculture, commerce, education, society and religion is manifest and is accepted by all as being of vast importance to mankind in all the walks of life. Its value as a whole, and the influence it will exert upon humanity is beyond estimate, but its greatest worth will be found in the influence which it shall have left behind after its doors are closed.

The separating of the continents by the Panama canal, which the exposition celebrates, will open new channels of trade in new areas and shift the world's commercial activity from the Atlantic to the Pacific in a large measure. This will result in that shifting of population which has always followed in the wake of great world expositions to a greater degree than ever before and as the exposition will be the magnet which exerts immediate attraction the influx of people will be immediate.

As originally planned by Chief D. O. Lively, and as developed by experience, the department of livestock of the Panama-Pacific International Exposition has always had the permanent good of the Pacific Coast States as well as the success of the exposition in view. Special activities in the department of livestock as well as the arrangement of its premium list will result not only in the complete success of the exposition livestock show, but in the permanent good of the United States, and especially of the west coast. There is a great shortage of food producing animals and this is world wide. There is a tremendous area of unused land which could be profitably utilized in the production of such animals in the coast and intermountain States of America. The assembling of the best in livestock in competition for premiums during the exposition will afford an opportunity, such as the western half of the United States has never before experienced, to secure animals of character, type and pure breeding for the restocking of the great plains and mountain valleys.

California has a world-wide reputation as a fruit producing State, but is not known as a livestock State, while the facts are that the annual value of livestock and poultry products far exceeds that of orchard and vineyard, and there has only been a bare beginning made when compared with the available area.

Milk is the one universal food and its production in ample supply and hygienic quality is one of the great modern problems. The climatic conditions of California and other coast States are such that feed suitable for dairy cattle can be produced more economically than elsewhere and these conditions ought to make of this region one of the world's centers for this form of human food. In order that farmers may not only have the advantage of an opportunity to buy of high quality dairy stock but may learn lessons as to how best to utilize such stock, the department of livestock will conduct a dairy demonstration in which the sanitary production and marketing of milk and its products and the proper feeding of milk cattle for the greatest production will be among the problems to be solved.



I. D. Graham, Assistant Chief Department of Livestock, P. P. I. E.

There are great areas that are not suitable for the accommodation or for the production of beef or dairy cattle which are still available for sheep and goats and offer an opportunity for investment in these useful animals such as does not exist elsewhere and this, coupled with the ideal climate, should bring fame to our mountain sides for their production of mutton and wool. In connection with the sheep show there will be held a sheep shearing contest participated in by the world's experts and followed by a wool sorting and grading competition, both of which will be conducted for the purpose of teaching the best methods, the adoption of which would save to the farmers of this country approximately five million dollars a year, which is now the actual loss. A great deal of interest is being manifested in Angoras, both for their utility in utilizing waste spaces and clearing up land and for their production of mohair which is an increasingly valuable product, while their flesh is gaining in popularity as its merits become known. Special attention will be given to the goats in the classification.

The impression is almost world-wide that the American hog can attain its best development only in the corn belt States. That this is not true, and that pork production is not only possible but highly profitable in the coast and mountain States is already the opinion of many, but its demonstration through object lessons will be made in the exhibit of the fat classes of swine as well as in the carlot classes, for which very large premiums are provided. As an economical producer of wealth the hog is recognized everywhere as having few equals and the horizon of his usefulness can and will be extended by reason of the exhibits made in the department of livestock.

The history of man is closely associated with that of the horse, and it is a well established fact that the progressive nations of earth have been horse owners and livestock producers. The horse furnishes the motive power for farm operations and is useful in many phases of commerce. Mechanical devices have emphasized his value and the good horse of whatever breed is worth more today than ever before. Special attention, therefore, will be given to the draft horse and the saddler, with full recognition to other classes. It is practically impossible to produce draft horses fast enough to supply the market demand, while the recognition of the value and utility of the saddler is creating a demand for this type that has not before existed.

Poultry, pigeons and even children's pets will have recognition in the premium list in the knowledge that each of these has a commercial value and that all humanity is interested in living things. The greatest influence that will be felt through the awarding of the premiums will not be the glory or fame won by the breeder of the prize winner or the exaltation of one breed above another, but it will come through the dissemination of pure bred animals and birds throughout the coast and mountain region from which the future supplies of such stock will be derived.

Of more importance than even the show for premiums will be the view herds and flocks of different breeds of animals and birds to be maintained on the grounds of the exposition throughout its entire period. These will be selected by competent authority as being typical of the breeds they represent, and will afford visitors at all seasons of the year the opportunity to study their characteristics and learn from them which breed is best suited to special conditions and individual needs.

California will be well represented in the exposition in the exhibit palaces and the counties building, but sufficient provision has not yet been made for her representation in the department of livestock. The wealth of a country lies in its soil and its strength in the development of that soil. No nation or State can continue long to prosper which does not have a permanent system of agriculture. Agriculture is the foundation of bank accounts, and all commerce is based upon it. There can be no permanent system of agriculture without livestock and one of the greatest needs which California now has is for an adequate supply of livestock of quality.

The various counties of California which have made such ample provision for participation should realize that no proper representation of their resources can be made which does not include livestock, and that the maintenance of a view herd of utility dairy cattle or of fowls or horses by each county will attract attention to that county as would not be done in any other way, and serve to remove the stigma under which the State now rests that it is a one crop State incapable of producing anything outside its orchards and vineyards. Never was such an opportunity offered to a State to effect its permanent good and develop along right lines as will come to California through the exhibit of this great aggregation of livestock which will carry with it the opportunity to purchase.

Statistics furnished by the United States Government are to the effect that the immigrant who moves from one State to another to engage in farming carries with him a cash capital of about $2,500, and if such immigrants can be shown that with the aid of livestock they can at once begin to secure a revenue while their trees and vines are growing into usefulness, the inducement for them to come will be vastly increased. California wants and needs more farmers to wrest wealth from our unoccupied acres. With them will come, not only an increase of the general

(Continued on Page 21).

How Iowa Breeds Draft Horses

By W. M. Carruthers

One of the best things done of recent years for the draft horse industry of California was the organization of the California Draft Horse Breeders' Association.

When the new association gets to working properly it might be wise for them to take a few suggestions from the great State of Iowa along horse-breeding lines. Their State Agricultural College has some of the finest specimens of draft horse flesh which money and brains can purchase. Their Percherons and Clydesdales have no superiors in this or any other country. This State college kept a man on the Chicago market two days a week for years to study every angle and phase of draft horse breeding so he could instill it into the young men of Iowa during the agricultural courses held at Ames. Professor C. F. Curtiss, dean of this agricultural college, is recognized and conceded to be one of the greatest draft horse judges anywhere, and he has specially superintended the building up of the draft horse industry at the college.

More than a decade ago the State of Iowa, believing that the draft horse had reached its zenith but still had a long afternoon, engaged Prof. Curtiss as the superintendent of the horse department of its State fair, held at Des Moines. He has held this position for upwards of ten years, with the result that the agricultural college at Ames and the State fair at Des Moines, Iowa, lead the Union in the production of good draft horses.

Recently McNab & Smith of this city shipped an express carload of draft horses from northern Iowa for truck work in San Francisco, and the president of this draying firm told the writer that they were the best lot of draft horses which had ever been shipped from the East to their stable here.

At the last State fair, held at Des Moines, the writer had the pleasure of looking at 29 yearling Percheon fillies being judged for the Chicago world's futurity stakes. Every one of these yearling fillies was Iowa bred but five, which were imported from France. After the ribbons were tied it was found that the five on top were all Iowa bred and the best the imported ones could do was take sixth place.

This is written to show what a State can do if it only tries. With the great advantages that the State of California has over the State of Iowa it seems with some perseverance that this State would produce its own heavy draft horse and not have to be dependent on any others.

KAFIR AND OTHER SORGHUMS

In the semi arid Middle West, that is, Kansas and States similarly located, and in the Southwest there is being a great deal of attention given to the different kinds of grain sorghums, like kafir, milo, Egyptian corn and grains of that type. Owing to the fact that these also are important in California and have possibilities far in advance of present development, there is room for attention here.

In every discussion of different varieties from elsewhere than California three varieties are always spoken of, kafir, milo and feterita, it being an interesting fact that the last named is hardly known in California, though a few persons have tried it and are very well satisfied with it. The differences between the plants named are very important, making it well worth while for a man to grow the one for which his conditions are best adapted.

This is what Prof. Stanley F. Morse, superintendent of the Agricultural Extension Service of the University of Arizona, has to say about it:

"The principal advantages of feterita over the other two crops is that it will mature in less time (about 90 days) and hence may be fitted into the rotation where milo or kafir would not do because of insufficient time for maturity before frost. Milo matures in about 100 days and kafir in 120 days. Feterita requires the least water, milo more and kafir the most. In feeding value the grain of feterita is about equal to that of milo or kafir, but it is softer and easier for animals to masticate.

"Feterita yields the least grain per acre (30 to 50 bu. or 1,700 to 2,800 lbs.), milo more heavily (40 to 60 bus. or 2,200 to 3,300 lbs.) and kafir (50 to 75 bus. or 2,800 to 4,000 lbs.), the most of all.

Feterita resembles kafir corn more than it does milo. For silage, kafir will yield more tons per acre than either milo or feterita. Kafir yields the best forage, feterita next and milo the poorest; feterita is frequently planted very early in the season to give an early crop of green feed."

It would seem from the above that kafir would outclass both milo and feterita provided there was the time to grow it and the moisture. Not only would the yield be heavier, but the quality superior.

FINE HOLSTEIN RECORDS

California Holsteins again show up strongly in the reports of the Holstein-Friesian Association for yearly records and records after eight months of milking. Of 156 cows reported from February 13 to April 30, 1914, as finishing yearly tests, California had 12. Of these A. W. Morris & Sons, Woodland, own 9, the University of California 2, and B. F. Anderson, Modesto, 1.

In the number, one, Miss Blaney, owned by Morris, has the distinction of entering the thousand-pound class, producing in the year 20,740.3 pounds of milk and 806.62 pounds fat, which, on an 80 per cent basis, would make 1,008.52 pounds of butter. Her test was 3.89. The famous Aralia De Kol, who astonished the country by entering the thousand-pound class after she was 12 years of age, is reported as finishing another yearly record, started at the age of 9 years, 5 months, 25 days, making 760.56 pounds of fat, only a little less than the thousand pounds of butter, a remarkable record for a cow of her age.

Her ability to transmit production is shown by Aralia De Kol 3d, standing second in the junior 2-year-old class with 17,509.5 pounds of milk, test 3.53, 618.35 pounds fat. This cow stands at the top of her class in seven-day records, made after eight months lactation, with 325.2 pounds of milk, per cent fat 4.07, fat 13.234 pounds. A cow of L. A. Hall, San Jose, also stands high in a similar test.

The University of California cows were Pieterje Bloom, with 21,455.3 pounds of milk, 678.04 pounds fat; and Pieterje Bloom 2d in junior 2-year-olds with 13,216.1 pounds of milk and 460.72 pounds fat.

HE KNEW BETTER—LATER

An old man over on Bear Creek was leading two lively calves out to early pasture one spring morning. When he came to the field he tied one calf to one of his boot straps and the other to the opposite strap while he opened the rickety gate. The calves ran away. When he was picked up his wife asked him: "Didn't you know any better than to do such a foolish trick as that?" "Yes, Ann," he answered, "I hadn't been dragged four rods before I saw my mistake."—Exchange.

WRONG STOCK MEDICINES.

Frequently drugs are administered to stock by people without any knowledge of their action. One individual only recently asked what he should give his horse when aconite and niter had failed to cure. It is always best for one to know the action of a drug before it is administered to livestock. A thorough study of the symptoms of the animal should be made before any drugs are given. Just because certain drugs have succeeded in some neighbor's horses there is no reason they will cure yours.

To illustrate: a horse is suffering from colic. A dose of opium would be correct to give if it is spasmodic colic, while if the patient has impaction of the bowels a dose of opium would only pack the bowels the harder.

A dose of aconite should never be given when the heart is weak and slow, for the reason that aconite depresses the heart and will cause death. On the other hand, aconite would be the proper drug to give when the heart was beating full and strong and very rapid.

A common mistake is to give horses sweet spirits of niter when suffering from frequent urination, as this drug is a diuretic or increases the flow of urine. It only aggravates the trouble in this particular case.

In diseases of the respiratory tract when the high fever has caused constipation one should never use aloes on account of the danger from superpurgation. Raw linseed oil is preferable, as it is much safer.—Colorado Agricultural College.

The natural habitat of animals is a place where their food is found. To raise food for animals in one region and feed it in another is a departure from the methods of nature.

SEEDING SORGHUM FOR HAY

That the grain sorghums should be more widely grown and used in California was emphasized in our May issue. They can be grown for grain, silage or hay and the method of growing is practically the same for the first two purposes. For the production of hay a writer at the Kansas Agricultural College, Kansas being a big producer of the sorghums says:

If the production of hay is desired the sorghums are usually seeded with the wheat drill. When sorghums are planted in this way the rate of seeding should be from one and one-half to two bushels to the acre in Eastern Kansas and from one to one and one-half bushels in Western Kansas, depending on the fertility and the condition of the land. (There is more moisture in Eastern than Western Kansas, hence the difference in seeding.—Editor.)

Excellent hay may be produced by seeding thickly in drill rows and cultivating. Less than one-half as much seed is required where this method of growing sorghum is practiced.

If properly cared for, the manure from one cow is said to be worth about 50 cents a week. It doesn't pay to neglect it.

Vaccines and medicines, valuable though they are, form a poor substitute for sanitation and proper care.

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT, with List of Inventions Wanted and Prizes offered for inventions, sent free. PATENTS ADVERTISED. FREE
WANTED—NEW IDEAS
Send for our list of Patent Buyers.
VICTOR J. EVANS & CO., Washington, D. C.

50 Cows Average 717 Pounds Butter

This is the average of the 50 cows that have completed yearly semi-official tests to date in our herd.

Did you ever consider what it would mean to place a young bull in your herd, bred in lines that are producing these results? It will mean increased production and value for every animal in the herd. He will produce the kind of stock that are in the greatest demand at high prices.

INDIVIDUALITY, PRODUCTION and TRANSMITTING ABILITY are essential in the choice of a herd bull. These are the qualifications of the young bulls that we offer as low as $150.00.

Engage your calf for use next fall. Your inquiries will be given prompt attention.

A. W. MORRIS & SONS CORPORATION
Holstein Friesian Cattle Woodland, California

HOWARD CATTLE COMPANY
Breeders and Importers of
SHORT-HORN CATTLE
55 New Montgomery Street San Francisco

RAVENSWOOD HERD SHORTHORN CATTLE
ESTABLISHED 1839
Herd Numbers 140 Well-Bred Scotch Animals Headed by Marengo's Choice 353873, Assisted by Wood Dale Stamp, a Son of Imp. Clara 53.
CHAS. E. LEONARD & SON, Proprietors.
ED PATTERSON, Manager.
Bunceton, Missouri.

HALLWOOD FARMS
Breeder and Importer of
SHORTHORN CATTLE
Address E. M. HALL, Carthage, Missouri.

Description of World's Record Cow

By Prof. H. S. Baird, University Farm

(All may possibly have heard that the cow whose picture is shown on this page has made a marvelous year's production of butter fat. The statement of this record alone would be of interest and of some value, but

"May Rilma," the World's Best Butter Cow.

the value would be limited. Why, or how, is the thing that counts, so we asked Prof. H. S. Baird of the University Farm, Davis, to write for the accompanying photograph an outline of the reasons why such a record was possible, as judged by the physical characteristics of this world's record Guernsey. This is of big value in helping every dairyman to appreciate dairy character in his cows. We also requested him to say something about the ancestry of the wonderful dairy matron, for production depends much on heredity. We believe that what he has given below will be found extremely interesting. Editor.)

All cows capable of producing large quantities of milk are not great producers. Neither can all cows be made great producers. A great producer must inherit certain characteristics properly combined and she must be properly fed and cared for. These necessary characteristics are the results of skillful selection and breeding and can be attained only by the men who can see these outstanding qualities and properly combine them.

The picture shown above is that of "May Rilma," a Pennsylvania Guernsey cow, who now holds the world's record for one year butterfat production, having produced 1,073.41 pounds. By studying this picture we can readily see that she is no exception to the rule. We notice the four principal characteristics which a dairy cow must possess and these are as follows:

1—CAPACITY—She has a large capacity, which is necessary for taking care of the enormous amount of food required for manufacturing such a quantity of milk. Her daily ration consisted of 18 pounds of a mixture of 250 pounds of bran, 100 pounds of gluten, 50 pounds cottonseed meal, 50 pounds hominy and 50 pounds of oil meal. She also received 3 pounds of beef pulp and 3 rounds of molasses. She was given all the alfalfa hay, clover hay and silage she wanted. The picture shown does not give one a good view of this cow's great capacity.

2—UDDER DEVELOPMENT—One cannot judge the quality of a cow's udder by its appearance alone. It should be soft, flexible and free from fleshiness which can be judged only by feeling. However, this picture shows her udder to be almost perfect in form. It is large, the underline is free from indentations between the teats and it extends well forward on the belly. The teats are the proper size and well placed.

3—BLOOD CIRCULATION—The large blood vessels shown in this picture are indications of the udder being well supplied with blood which is necessary for transporting the digested food from the intestines to the udder, where it is manufactured into milk. If the reader will look closely on the underline of the belly, he will see a very large blood vessel which extends forward from the udder over half way to the front legs. Other vessels show well on the side of the udder. These and many others not shown in the picture, with their extended walls show that the udder is well supplied with blood.

4—CONSTITUTION—That this cow has a good constitution is shown by the depth of her chest. A good constitution is necessary in a dairy cow in order that she may ward off disease. Any cow which can produce such a large quantity of milk and so uniformly from day to day for thirteen months as this cow did, must have a powerful constitution. Compare the idleness and breakage of the average steel machine for thirteen months with that of this delicate machine (May Rilma) for a like period and we must confess that she has a most wonderful constitution.

Other points of less importance and which do not have a direct relation to the production can be seen in this picture, viz.: long, thin face; thin, fine neck; short, straight front legs; slight elevation from loin to the tail attachment, etc.

"May Rilma" is the product of a long line of high producers. Her dam, Rilma of Paxtang, was never tested, but in her thirteenth year she was known to have produced 40 pounds of milk daily, which leads us to think she was a high producer when in her prime. The maternal grandsire, Sheet Anchor II, has three daughters with records of 455, 459 and 477, respectively, and his paternal grandsire won over 200 prizes as a show bull. The sire of May Rilma's maternal grand dam was the sire of Trilby of Paxtang, with a record of 414.65 pounds of butterfat, and her great great grand dam was the grandson of Procrix of Paxtang, with a record of 506.56 pounds of fat.

May Rilma's sire, Mars of Woodcrest, has nine advanced register daughters whose records range from 378 to 591 pounds of fat. Other records of Mars of Woodcrest's line are lacking, but there is no doubt but that a bull having sired so many high producers, must have a good backing.

There is a lesson for the dairyman connected with the lack of records for May Rilma's ancestors. Many of the ancestors of this cow, whose records were never kept, were evidently great producers and were probably rated as ordinary good dairy cows. May Rilma without the care and feed that she has received would undoubtedly never have gained the prominence she possesses. Compare the value of May Rilma and her offsprings to-day with what they might have been had her record never been kept. Every dairyman cannot have a "May Rilma," but there are many dairymen in California who have high producers in their herds whose values would be doubled and trebled if they knew their production.

There are also many cows in California whose records would be materially increased with better care and feeding, but without these their value will never be known. Some dairymen who feed alfalfa alone maintain that the increased yield due to the addition of grain to the ration will not more than pay for the extra feed. This, of course, depends upon the individual cow and the ration, but even if by better feeding the increased yield pays for the increased feed only, are we not raising the standard of our dairy cow each generation? This is a question that every dairyman should think about.

HOW THE EXPOSITION WILL HELP CALIFORNIA

(Continued from Page 19).

prosperity but a permanency of good citizenship, which is always the State's best investment.

The fundamental cause of the decay of nations is a decline in soil fertility and not in war or pestilence; earthquakes or drouth. Agriculture is the ultimate basis of all wealth. The annual crops which the farmer produces are just so much new wealth which never before existed. The exchange of these crops is commerce and the convenience of commerce builds cities, railroads and banks. The intricacies of commerce compel laws and governments; its protection demands armies and navies; its expansion requires invention and discovery, but its continuance depends upon the richness or poverty of the soil. Without agriculture no civilized government can stand; no nation of free men exist, while without livestock there can be no permanent system of agriculture. The vast and vital importance of the department of livestock, not only to the exposition, but to the permanent good of the country, is now generally recognized and with this recognition has come an interest in this department and its work which intensifies as the days go by. Men are coming to realize more and more, that the breeding and raising of livestock is simply co-operating with nature.

Too long we have fought nature and mined our soils of their fertility instead of farming them and when poor yields showed a depletion of their strength we have moved to new lands in new States. Now we cannot move to new lands and are forced to learn that nature can only be commanded by obeying her laws.

Farming without livestock depletes the soil, increases loss from drouth, robs our children of their rightful inheritance and makes of our work a necessary evil and if the department of livestock shall show, in addition to a magnificent exhibit of the world's best in domestic animals which is now assured, that livestock is absolutely essential to agricultural prosperity without which no State or country can long continue, it will have doubly served its purpose.

Remember that it was Abel's offering that was accepted.

The dairy farmer can raise hogs cheaper than anyone else and naturally this makes better profit for him from this one line.

A LIVESTOCK PROBLEM

DEHORNING JERSEY COW—I read in the June issue of the Orchard and Farm that dehorning young bulls after their horns have grown some, improves their disposition, which causes me to ask you the following question: I have a fine Jersey cow, 4½ years old, that is rather wild, particularly toward women, and while she has never hooked anybody as yet, she might do so at any time if she got a chance, which makes me feel uneasy for my wife and children. Kindly advise me if it would be practical to dehorn a cow as old as that, whether it is dangerous, and how it is done?—T. S., Menlo Park.

We forwarded this question to H. E. Cornwell of Modesto, the dairyman referred to in June issue, who is looked upon as quite an expert in this line of work, receiving the following reply:

I have dehorned cows of different ages and have had good success, except in extremely rainy weather. I have had some troubles from colds in the cows heads, but nothing serious. The way I prefer is to take a good, sharp knife and cut around the horn to be sure and leave as much as three-fourths of an inch of skin on the horn, cutting a little deeper on the top of the head than the bottom. I also prefer a good fine toothed saw. The way I dehorn cows is to put the rope around the neck and one front leg to keep them from choking, and then around both hind legs and fasten around post back a sufficient distance so that the cow can fall easily. Then I loosen the rope and give a half hitch over both hind feet so that there is no danger of the rope slipping; then make all ropes tight before cutting.

As for age, I don't think there will be any bad results whatever. I am quite sure the cow will be more gentle than before. I call to mind one herd of twelve cows with horns, giving eight pounds of butter fat per day. The third day after dehorning they gave twelve pounds of butter fat per day because they were not afraid to stand close together and eat.

HOGS GAIN ON MILO

It seems at first glance as if a more profitable method of using milo maize for hog feed could be used than just giving pigs the heads, but an experiment conducted by the Arizona Agricultural Experiment Station indicates that the method is pretty near right.

Four lots of four months' old pigs, equal in weight and condition, were selected and fed as follows:

Lot 1—Chopped alfalfa straight.

Lot 2—Milo maize heads.

Lot 3—Chopped alfalfa and milo maize heads combined in a balanced ration.

Lot 4—Chopped alfalfa, milo maize heads and barley.

There was the surprising result that not only the largest, but the cheapest gains, were made by the lot fed on straight milo maize. As this is one of the cereals easiest grown by the small farmer in California, it gives the small farmer as great, or greater advantages in raising hogs right as anybody.

Although skim milk was not used in the experiment, there is apparently no doubt that skim milk would be a decided advantage, making the grain more valuable and giving the cheapest and best gains of any of the ordinary feeds.

The sheep farm is notable for the absence of weeds, the condition of the fences, and the general neatness of appearance. Sheep make the soil more fertile, furnish two sources of income, wool and mutton; and are usually associated with the best system of farming in every country. Sheep form a desirable addition to the stock on the farm; more farmers should raise them.

All kinds of hay when cured in the windrow and shock has nearly double the feeding value of that dried broadcast in the sun.

California Aspects of the Breeds

Hereford Cattle

Hereford cattle are fast coming to their own in California. The setback they received a quarter of a century ago is entirely eliminated. The boom which this breed had in the early 90's, when every beast with a white face was passed along and sold for a

Repeater VII, Undefeated Grand Champion Bull of America in 1913.

Hereford has gone forever. The hindquarter defect (the rangeman's eyesore) is seen no more. There remain the fast disappearing vestiges of a theory once widely held that a Shorthorn cross in range herds was necessary to give them size. Judged by a man on horseback, the Shorthorn may be claimed the tallest, but the scales have proven their weight is now equal.

Fads.

The Hereford breeders have been particularly free from fads. No color craze has ever arisen to damage the breed; no craze for any particular line of blood. The Hereford breeder is content to breed a good individual, and as a rule he has had sense enough to seek good individuality through securing first-class individuals to breed from; hence, you always hear the Hereford breeder, in speaking of the blood of his stock, refer you to some bull or bulls of acknowledge good quality as the immediate ancestors of his stock. Other breeds may call their families of cattle after cows that existed over half a century ago and whose blood is now diluted enough to amount to obliteration. But the Hereford breeders prefer the present rather than the past. That their course is right is proven by the fact with the steady improvement in Hereford cattle.

Markings.

The newer a breeder is in the Hereford business the more tenaciously he contends for certain markings. If we will take the pains to become familiar with Hereford history we will find that within fifty years a white Hereford cow won first prize at the Royal Agricultural Show of England, and that she produced three gray with white face prize winners at subsequent shows of the same society. It is not long since there was a spirited rivalry between the breeders of red with mottled face Herefords, the gray with white faces, and the red with a white face.

The red with white face finally predominated, and bulls of this strain were crossed on the other two, so that at the present day the bloods of the mottled face and the gray Herefords have been pretty well submerged. Yet to this day, and it is presumed, for the next hundred years, evidence of the old gray and spotted blood will crop out. Examples in point are the champion steers, Sir Blanco and Old Times.

This cropping out of these old bloods in animals known to be pure is more an evidence of their purity than otherwise. Some novices go so far as to make silly objections to a spot of red at the eye, or absence of white on the neck, and to a more or less amount of either color. The ignorant even go so far as to condemn such animals as being impure. These objections are ample evidence that the critic is not acquainted with Hereford breed.

Useful Hints to Buyers.

It is always a time to learn lessons when old established herds are dispersed, as it is then seen what the special aim of the individual breeder has been and what type he has chiefly been associated with. At a dispersion sale, purchasers who are forming new herds are well advised if they carefully note the grouping of various families in the catalogue or follow the line of breeding which has chiefly contributed in the manufacture of the best specimens in the herd. It is usual for men to buy at random a few of the best-looking cattle and think by taking them home and mating them with any bull which they may happen to have, although he be himself of great merit in form and blood, they are certain of having first-class produce. The chances are that disappointment will follow, although of course some men have what is called luck, and the cross with the new purchases may "hit."

The advice that can be offered to beginners is to go carefully through the herd and mark the best animals of the different ages, and then go and look out their dams. It is often that the best breeders in a herd are overlooked; probably their maternal duties have taken away something of their natural bloom and wealth of flesh, and the value of these priceless matrons is unrecognized by the novice. The "old hands," on the contrary, are on the alert, and pick up the bargains which the best breeders usually turn out to be.

Skill of the Breeder.

It does not at all follow that the best-looking females are the best breeders (from a showman's point of view). If it were so, breeding would become a certainty. "Like produces like" is the theory, but unfortunately it is not always carried out in practice. It is here that the inborn talent of the breeder comes in; he knows in some mysterious way that such and such animals are likely, when mated together, to produce what he wants, and he works out his ideas to a successful issue.

There is something in a cow which tells an experienced man that she is likely to be a good breeder. In a Hereford you would look for a nice feminine character, a mild, expressive eye, nicely turned horns, rather of an upturning curve for choice, well sprung ribs, good back and lengthy quarters, roomy body, and well-developed udder.

She may be a trifle small and what some would call mean in her general appearance, and perhaps somewhat light in the fore quarter and neck, but if she she is handled you will find that her "touch" is perfection, that her hide will fill your hand, and that she is covered with an ample coat of hair, or with undeniable evidence of having such before the winter days require it. If such a cow as this is found in an old-established herd, and is also found to be the dam of some of the plums among the younger animals,

(Continued on Page 23).

Skims CLOSER Pays BETTER

All butter fat saved by uniform skimming of the "Automatic." Self-powered, crankless and gearless, an engine and separator combined. Costs only 3 cents an hour to operate.

AUTOMATIC CREAM SEPARATOR

Over 10,000 In Use

Skims faster than ten men can milk. The engine has double the capacity needed. Runs for hours without watching. Ward's "AUTOMATIC" guaranteed and sold on 30 Days Trial at our risk. Every farmer with five cows or more should write today for Cream Separator Book No. 15 to

MONTGOMERY WARD & CO.
Chicago Avenue Bridge CHICAGO

30 DAYS TRIAL

BLACK LEG

LOSSES SURELY PREVENTE by Cutter's Blackleg Pills. Lo priced, fresh, reliable; preferred Western stockmen, because th protect where other vaccines fa Write for booklet and testimonial. 10-dose pkge. Blackleg Pills $1.00 50-dose pkge. Blackleg Pills 4.00 Cutter's Blackleg Pill Injector 1.50

Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. c Use any injector, but Cutter's simplest and strong Every package dated, unused pills exchangeable f 'resh after date on package. Do not use old vaccins (ou or any other), as it affords less protection than fresl Insist on Cutter's. If unobtainable, order dire Send check or M. O., we pay charges and ship prompt THE CUTTER LABORATORY, Berkeley, Californi

The Telephone Emergency

THE stoutest telephone line cannot stand against such a storm as that which swept the Middle Atlantic coast early in the year. Poles were broken off like wooden toothpicks, and wires were left useless in a tangled skein.

It cost the telephone company over a million dollars to repair that damage, an item to be remembered when we talk about how cheaply telephone service may be given.

More than half of the wire mileage of the Bell System is underground out of the way of storms. The expense of underground conduits and cables is warranted for the important trunk lines with numerous wires and for the lines in the congested districts which serve a large number of people.

But for the suburban and rura lines reaching a scattered pop ulation and doing a small busi ness in a large area, it is imprac ticable to dig trenches, build con duits and lay cables in orde that each individual wire may b underground.

More important is the probler of service. Overhead wires ar necessary for talking a very lon distance. It is impossible to tal more than a limited distance ur derground, although Bell eng neers are making a world's recor for underground communicatio

Parallel to the undergroun there must also be overhead wir for the long haul, in order th the Bell System may give servic universally between distant par of the country.

AMERICAN TELEPHONE AND TELEGRAPH COMPAN AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Servi*

Building a Berkshire Herd

Although the following story is largely an account of the starting of the Oak Grove Stock Farm at Woodland, where one of the largest and best known Berkshire herds in California is located, the underlying feature is the way that the advantages of proper methods of swine raising was brought to H. G. Armstrong, the founder of the herd and manager of the farm.

An Example of Fine Type and Good Breeding Capacity.

Armstrong grew into the farming business by degrees, not out of it, the way that many young fellows do. Many young fellows go by degrees from town to farm, not from farm to town, as did Armstrong. He grew up in Woodland and had no direct farm experience, though naturally pretty well in touch with things. When high school days were over about nine years ago the matter of course thing was to go to college and prepare for something else than farming, for agriculture was not so popular then as now. However, he liked outdoor work, so took up civil engineering rather than indoor training.

After graduation and some engineering work, G. G. Armstrong, the father, needed some help in his wholesale butcher business, and here H. G. Armstrong learned the hog business thoroughly from the marketing side. There was also a ranch at the edge of town used for fattening cattle, and when G. G. Armstrong retired from the butcher business H. G. Armstrong completed the back to the land circuit by turning the place into a dairy ranch, getting good stock and improving the property as much as limited capital and the earnings of the place would permit.

A dairy of grade Durham cows was started first, the cows being replaced gradually by grade Holsteins and the others sent to the block. A purebred Holstein bull was also kept and the one kept now is fit to head a purebred herd.

The work in the wholesale butcher business showed Armstrong several things about hogs that made him want to keep some good animals. One was the advantages of the right kind of feeding, the other the benefits of good breeding. He put the knowledge to such good effect that he had the distinction quite a while ago of turning off the best car of market hogs ever raised in Yolo county. The methods it is believed are practically those that will be universal before many years have passed in California, and are essential to permanent success. The noteworthy feature is the feeding of barley or some grain in moderate amounts all along and finishing, as is usual, with plenty grain.

At six and one-half months 66 hogs averaged 210½ pounds and because of their finish and uniformity brought one cent over quotations. They were a fine buy at that, as they dressed nearly 80 per cent. Barley with alfalfa and skim milk and wise handling did it. From his butchering experience and otherwise Armstrong claims that the three weeks' feeding of alfalfa fed hogs on barley is entirely wasted and a dead loss, while hogs that have had some barley all along will gain immensely in finishing. Skim milk also he considers extremely valuable as long as barley goes with it.

Such feeding is far cheaper than straight alfalfa, or alfalfa and skim milk, owing to quick gains and the short time needed to make a market hog. The straight alfalfa hog will take double the time to make the weight of a hog getting some grain and the extra alfalfa he will eat will more than make up for the cost of the grain and there is half of the time and labor of raising him wasted. Or, if both are marketed at the same time, the extra weight of the grain fed hog will more than pay for the grain and there will be the extra price on total weight for the finer finish.

Good results with market hogs and the knowledge of the advantages of good breeding brought Armstrong into the purebred business. From his former business experience he liked the Berkshire from the way they dressed and started with some purebred Berkshires from the former Four Oaks Stock Farm. Most of the finer points in the breeding business were secured from association with Mr. Harold, the proprietor, who knew the business as well as any man in California. After the latter's death, the Four Oaks Stock Farm herd was purchased, making, with what had been built up in the meantime, one of the largest and best bred Berkshire herds in California. Quite a number of Eastern animals have also been secured to introduce new blood lines. As far as the merits of the stock itself goes, Armstrong claims that California can turn out as good animals as the East, or better, with our fine climate and alfalfa pasture.

There are kept at present about 30 brood sows or bred gilts, which number will be increased when equipment is available to about 40 sows and as many more as conditions call for. Among the well-known boars owned are, or were, Artful Masterpiece, Premier Longfellow and Berry's Combination.

Feeding methods of all purebred men are about the same and give a suggestion of what the market man might do. Alfalfa pasture is used for the growing stock. Middlings are used in a mash for sows, boars and other animals that have to be kept in close quarters. Ground grain provides most of the other feed under such conditions, as they cannot eat very much alfalfa hay. What skim milk there is from the dairy is, of course, fed also, most of the output of the dairy being sold in town.

Feeding is generous to sows in pig or nursing, and to growing pigs, special care being given to see that the latter do not lose their baby fat at weaning. With other animals generous feeding would injure and they are fed only enough to keep them in good condition.

The property of about 107 acres is irrigated from one of the finest and best wells in Yolo county and is still in process of development. The hog herd in quality, if not quite in number, is about where it is wanted. There will need to be greater equipment provided, but when the ranch is in full running order the grade Holstein herd will be changed to a pure-bred one, and if present progress keeps up, the place should be one of the finest in location, management, equipment and quality of stock in the State.

ASPECTS OF THE BREEDS

(Continued from Page 22).

the wise man will keep on bidding as long as his purse will permit him.

Another question that is to be considered is, Do you want to breed bulls or females? Note carefully the dams of the best bulls. Cows that can breed them are few and far between; and bulls that are sires of good bulls are scarcer still. With some such thoughts as these, the careful buyer will usually attain success.

California's Need.

California needs more Herefords. This State can never have enough if they are the right kind. They are profitable for their owner whether in the fertile valleys or on the bleak peaks of our separate mountain ranges. Their fanciers claim for them leaders as grazing cattle and in the winter time when feed is short and scarce, they are not usually found standing along a barb wire fenc , but are out hunting their living on the sunny side of the mountain or in some glen or ravine where the feed is usually protected.

They are the healthiest among the beef breeds. Experience has shown it. Rarely is there a case of tuberculosis found in any herd. This may be accounted for by two reasons; namely, this breed has never been pestered and set back by fads; and second, constitution and heart girth have for years been the watchwords toward the betterment of this breed of cattle.

Again and again we hear of new breeders branching out in the Hereford industry verifying the above statement. Should all accounts be correct, Panama-Pacific year will see a splendid array of these beautiful uniform cattle on the fair grounds. Such an education toward the true type of the modern Hereford will do much to help their cause on the Western slope of the Rocky Mountains.—W. M. CARRUTHERS.

Secretary Daniels has banished booze from the Navy. We have always believed that the sea would finally go dry.

Stey-Brae Ayrshires
BULLS FOR SALE
From imported cows. These bulls are large, with good colors. For particulars and prices, address
E. B. McFARLAND,
San Mateo, Cal.

OHIO IMPROVED CHESTER WHITE SWINE
A few boar pigs of March and April farrow left. Sold out of everything else at present. All stock cholera immune. Crated and registered free.
C. B. CUNNINGHAM,
Mills, Sacramento Co., Cal.

NASH BROS.
Tipton, Indiana
Breeders of Dorset Sheep.

George Parnell
Wingate, Indiana
Breeder of Cheviot Sheep

Charles Leet & Son
Mantua, Ohio
Breeders Hamshire and Southdown Sheep

George D. Harrah
Newton, Iowa
Breeder of Hereford and Shorthorn Cattle.

Hog Cholera and County Swine Breeders' Associations

Contributed by Dr. Charles Keane, State Veterinarian, Sacramento, Cal.

Just imagine for an instant that diphtheria, typhoid, small pox or any other infectious disease has appeared among human beings in any of our enlightened cities; and then imagine for another instant that the only measures adopted for the control and eradication of this disease is the vaccination of exposed people in which virus is used as an adjunct. Nothing else is done with the possible exception of belated burials of corpses, and in some instances this is not even attempted. The inhabitants pursue the even tenor of their ways; friends and relatives leave those who are sick and visit those who are well. And after dwelling for a short time on such a hypothetical condition of affairs, and figuring the possible results, wouldn't you think that in this enlightened age the residents of that city would soon awake from their apathy? Would it be long, in your opinion, before a strong organization of citizens would get together and with proper expert advice adopt adequate measures to control this epidemic?

Unclean Hog Pens That Harbor Disease Germs.

A state of affairs similar to the foregoing does exist in the United States to-day, and this hypothesis is not the least bit overdrawn if we are to candidly discuss the hog cholera situation. Hog cholera cannot be controlled, and its ravages will increase unless the swine breeders will bind themselves together in strong organizations for the purpose of fighting this disease on broad, sanitary principles. The rapid spread of this disease during the past two years is alarming, and unless our swine breeders become alive to the fact that their great industry is in peril, the losses from this disease will, undoubtedly, during the near future discourage hog raising.

Statements such as these might not be viewed with concern by some swine breeders, especially those who have not as yet given the subject close attention, or who place great faith in the serum immunization process of producing immunity against cholera. The literature that has been published concerning anti-hog cholera vaccination has, in many instances, been very misleading, inasmuch as vaccination is not a panacea and will not in itself generally control this disease. On the contrary, in the opinion of the writer, and many other observers, the indiscriminate use of the sero-simultaneous method of vaccination has been directly and indirectly responsible for some of the disease we have had to contend with during the past two years or more. On the other hand, however, the sero-simultaneous method, where properly used, and where tested and properly kept serum and virus is injected, is a most valuable adjunct in combatting the ravages of cholera in actually infected and exposed herds.

Serum is simply an adjunct in fighting cholera, and its use is somewhat analagous to anti-toxin as an adjunct in fighting diphtheria in human beings.

The key note of the control and eradication of all infectious diseases, whether affecting human beings or domesticated animals, is the prevention of direct and indirect contact between sick and healthy individuals.

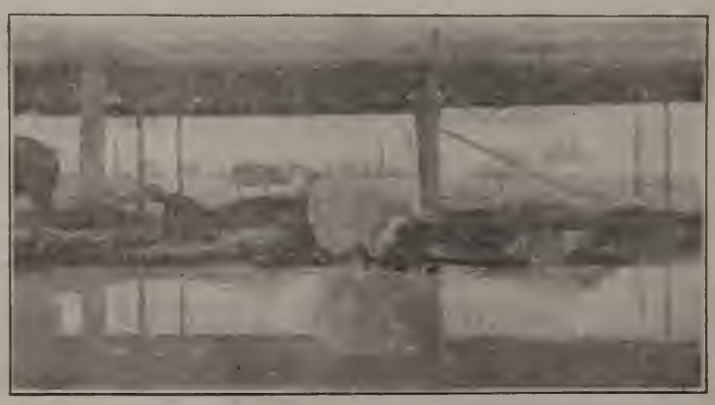
For example, if diphtheria occurs in a member of a household, in addition to ascertaining the source of the infection, the health officer isolates the patient, prevents direct and indirect intercourse with the infected premises as long as danger of transmission exists, and, if circumstances warrant, immunizes the patients as well as those who might have been exposed to the disease.

Cholera is just as infectious among hogs as diphtheria and other human infectious diseases are among human beings; consequently, in order to successfully combat cholera infection we must handle the disease in just the same manner as we would handle dihptheria, smallpox, typhoid, or any other infectious disease of man.

We realize that some swine breeders are endeavoring to do this, but, generally speaking, sanitary principles are neglected. The laws, as well as the facilities with which officials are afforded, in view of the widespread prevalence of cholera, are entirely inadequate to control this disease, unless the swine breeders will themselves unselfishly co-operate with such officials.

Constitution of Breeders' Organization

In order to elicit such support from swine breeders in California, the office of State Veterinarian has started the organization of County Swine Breeders' Associations in the various hog raising counties of this State. An excellent beginning has been made in this project by the organization of such an association in Colusa county



Disease-Breeding Method of Watering Hogs.

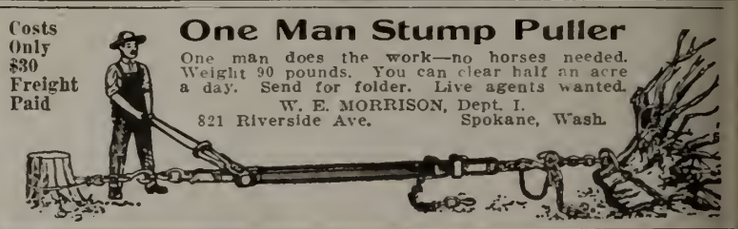
DORSET SHEEP AND HOLSTEIN CATTLE

One of the oldest and largest breeding establishments in the East. Our specialty: High-Class Show and Breeding Animals. Stock for sale. Write for prices, etc.

TRANQUILLITY FARMS
Arthur Danks, Mgr. Allamuchy, N. J.

HILLCREST STOCK FARM
Importers and Breeders of
SHORTHORN CATTLE, SHROPSHIRE AND MERINO SHEEP.
FOR SALE, SPECIAL, at this time
Splendid Registered and Unregistered Shropshire and Merino Rams,
IN LOTS TO SUIT PURCHASERS.
Address THORNTON S. GLIDE, Davis, Cal.

Costs Only $30 Freight Paid



One Man Stump Puller
One man does the work—no horses needed. Weight 90 pounds. You can clear half an acre a day. Send for folder. Live agents wanted.
W. E. MORRISON, Dept. I.
821 Riverside Ave. Spokane, Wash.

A Recent
U. S. Government Report
Makes plain your need of a
UNITED STATES
CREAM SEPARATOR
The skimming device of which is GUARANTEED NEVER TO RUST.

The scientific staff of the dairy division in the United States Department of Agriculture recently conducted a series of experiments to learn what effect, if any, iron (rust) has on cream and butter.

The tests definitely established the fact that **even minute particles of iron (rust) caused certain undesirable flavors** and that in every instance when butter was scored a few days after the making, **the samples in which iron (rust) was present scored lower than the butter made from cream which contained no iron (rust).**

In using the United States Cream Separator with non-rusting skimming sections of **nickel silver** you avoid all risk of having "metallic" butter. **The U. S. sections are positively guaranteed never to rust.** No other separator manufacturer gives you a printed non-rusting guarantee.

Yet, United States Cream Separators with this big exclusive improvement are sold at **no higher prices than other separators without it.**

It is time well spent to learn from your U. S. dealer or us more about the exclusive U. S. non-rusting feature.

VERMONT FARM MACHINE CO.,
Chicago, Salt Lake City — Bellows Falls, Vt. — Portland, Ore., Los Angeles

ast month. In addition to adopting a constitution and by-laws, he following code of ethics was adopted:

Section 1—Members of this association are expected to co-operate with the State Veterinarian in his efforts to control and eradicate cholera as well as other diseases among swine in Colusa county.

Section 2—Every member of this association, whenever sickness occurs in his swine which appears to be infectious in nature, shall immediately notify the State Veterinarian of the existence thereof.

Section 3—No member of this association shall allow the carcass of any hog which dies to remain upon the ground, but he shall immediately dispose of such carcass by cremation, if possible; otherwise by deep burial.

Section 4—Whenever cholera appears among the hogs of a member of this association he shall allow a placard to be tacked on a prominent place on the fence adjacent to the entrance of his premises; such placard shall state in plain language that cholera exists among the hogs on such premises, and shall warn all people to keep away from the hog pens thereof.

Section 5—Every member of this association shall prohibit strangers, and especially vendors of patent hog medicines, from visiting his hog pens.

Excellent Method of Watering Hogs.

Section 6—Every member of this association, wheever cholera exists among his hogs, shall refrain from visiting the hog pens of other swine raisers in Colusa county, and shall also clean and disinfect his hands and change his clothes and shoes after handling his infected hogs and visiting his infected pens, before he holds any intercourse with any other swine raiser in Colusa county.

Section 7—Whenever it has been determined that cholera exists among the hogs of any resident of Colusa county, the president of this association shall urge all swine breeders who are raising hogs in the vicinity of such outbreak, to allow all such hogs to be immunized with anti-hog cholera serum.

Section 8—Every member of this association shall have displayed in a prominent place on a fence near the entrance of his premises a stenciled sign reading as follows: "MEMBER OF COLUSA COUNTY SWINE BREEDERS' ASSOCIATION—NO VISITORS ALLOWED IN HOG PENS WITHOUT PERMISSION."

Section 9—Every member of this association agrees to see that the rules of this association and its code of ethics, as well as the laws of the county of Colusa and the State of California concerning the eradication of hog cholera, are properly complied with by his neighbors, and each member further agrees that when violations of these rules, code of ethics and laws come under his observation, he will immediately notify the member of the exeeutive committee who lives in his district, as well as the president of the association, and also, if neeessary, the State Veterinarian.

Section 10—As hogs which are vaccinated by the sero-simultaneous method for producing immunity against cholera are, in many instances, capable of transmitting cholera to non-immunized hogs, every member of this association agrees, whenever his hogs are so vaccinated, that he will permit his premises to be placarded as follows: "HOGS ON THESE PREMISES HAVE BEEN VACCINATED WITH VIRUS AND SERA; NO VISITORS ALLOWED IN THESE HOG PENS."

Such a member shall also handle his hogs and prevent the extension of hog cholera infection, as is provided for in section 6 of this article.

Section 11—The members of this association agree, wherever possible, to remove their hog pens from portions of their ranches that abut on public roads.

Section 12—Every member of this association agrees that whenever new hogs are purchased from outside of Colusa county, that they shall be placed by themselves for a period of at least ten days before being turned in with the other hogs.

As will be noted, the general principles of combatting an infectious disease are included in this code of ethics, and from the amount of enthusiasm being shown by Colusa county swine breeders, excellent results are predicted. In addition to the county organization, local organizations of similar character are also being organized in Colusa county.

The formation of similar organizations in other counties by the State Veterinarian depends upon the future activity of the Colusa County Swine Breeders' Association.

ALFALFA HAY FOR HOGS.

Although alfalfa pasture is one of the finest feeds for hogs that there is, alfalfa hay is unsatisfactory feed in a number of ways under ordinary methods of feeding and lots of hogs get but little of it, or but little good from it when it is fed if they are penned. Being the cheapest food there is, and one of the best flesh and bone builders available, right methods of feeding it are highly desirable.

A recent bulletin of the United States Department of Agriculture makes these suggestions, which are not new, but yet are valuable: If intended for hogs, alfalfa should be cut green a little before the appearance of the first blossoms, that is, quite a bit earlier than it is ordinarily cut for dairy cows. It is also best to take it from a portion of the field where the stand is thick. The hay will then be fine, palatable and rich in protein. When the hay is fed whole there is considerable waste under any conditions.

One of the best ways to feed it is to run it through a hay cutter, chopping it into lengths of about one-half inch. The hay is then mixed with chopped or rolled wheat or barley. The mixture is moistened with all of the water that it will absorb and allowed to stand for 12 hours before it is fed. Some soak the hay and add the grain just before feeding. Where it is not neeessary to hasten the growth of the hogs alfalfa hay may form one-half the ration by weight. Where a rapid gain is desired a ration consisting of one-fourth alfalfa hay and three-fourths grain is more satisfactory. With alfalfa hay so cheap and abundant in California, its food value so high and grain so expensive, it would appear desirable to make more use of alfalfa hay for penned hogs than is made.

ANIMALS AID CIVILIZATION.

Although no discreet person will venture to determine the relative weight which should be given to the influences which have made for civilization, there can be no doubt that the care of domesticated animals has been one of the most potent of these agents. Not only has this employment served to develop the motives of caretaking that result in the postponement of the momentary satisfaction of indolence or of hunger for the prospect or security of wealth to come, but it has served to arouse and broaden the sympathies given man.—Nathaniel Southgate Shaler.

QUALITY
BERKSHIRES
OUR BERKSHIRES ARE NOW BETTER THAN EVER.
They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.
Send for Catalog.
Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

Ask Your Dealer for
EL DORADO COCOANUT OIL CAKE
for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market to-day. If your dealer doesn't carry it, address
EL DORADO OIL WORKS
149 California St. San Francisco

Sugar Valley Shropshires
Are Not SURPASSED for QUALITY by Any FLOCK in AMERICA
I ALWAYS HAVE ON HAND choice flock headers, breeding ewes and choice show stock that cannot be surpassed in quality at the prices I ask. In my flock runs the Best Blood of the Best English Flocks. IF YOU ONCE BUY OF ME YOU WILL ALWAYS BUY. Come and see my flock; it will please you. My farm is easy to reach from Chicago. If you want first-class Shropshire Sheep write me before buying at extravagant prices.
I won Champion Ram, First on Pen of Ewe Lambs and First on Flock at the last International Show with stock of my own breeding.
L. KAMMERER, Proprietor, BRODHEAD, WIS.

Agricultural Meetings at the Exposition

By A. L. Cowell

A unique feature of the Panama-Pacific International Exposition will be a great series of congresses and conventions so [illegible] as to form a "live exhibit" [illegible] the methods by which the [illegible] shown in the exhibit [illegible] attained.

[illegible] agriculture in general and horticulture and the livestock industry in particular are to be given great attention at the exposition, the conventions of organizations dealing with these subjects will be of special interest. The American Association for the Advancement of Science is planning to hold a summer meeting in August in connection with the exposition, and [illegible] of its work has to do with practical application of scientific discoveries to farm problems. The American Association of Agricultural Colleges and Experiment Station will meet in San Francisco in the same month and will thus bring the leading agricultural experts of the country together here.

The International Congress of Viticulture is to meet in San Francisco June 7. It will bring together European and American experts who have to do with all phases of the cultivation and use of grapes. The American Pomological Society is expected to meet here at about the same time.

Last year a congress on Marketing and Farm Credits was held in Chicago and a resolution was adopted to hold a similar meeting in San Francisco in 1915. The plan has not yet been worked out, but, in view of the growing interest in the subject, it is expected that this will be one of the most important conventions to be held here.

Two congresses of special interest to Californians will the Alfalfa Congress, which is to be held under the auspices of an organization with headquarters in Chicago, and the Potato Congress, to be held under the auspices of the National Potato Association of America.

At last year's convention of the Farmers' Educational and Co-Operative Union, which was held in Salina, Kansas, a resolution favoring the holding of the 1915 convention in San Francisco was adopted. Final action on the matter cannot be taken until this summer. J. E. Lowery of Napa, vice-president of the California division of the organization, will attend the next convention with a strong invitation from the California division to secure the 1915 meeting.

The National Top Notch Farmers' Club, which is an organized effort to secure the utmost possible output from the soil, is expected to participate in the series of congresses and conventions in San Francisco next year.

The plans for the exhibit in horticulture are attracting wide attention and many societies interested will arrange to hold regular or special meetings in San Francisco. Among them are the Society for Horticultural Science, the Society of American Florists and Ornamental Horticulturists and the National Association of Gardeners.

Organizations connected with the livestock industry are showing special interest in the exposition. The American Society of Animal Nutrition, the American National Livestock Association, the International Milk Dealers' Association, the American Association of Medical Milk Commissioners and the National Pet Stock Association of America are among the organizations which have definitely or tentatively decided to meet in San Francisco in 1915.

Among the organizations of cattle breeders, the American Hereford Cattle Breeders' Association and the Red Polled Cattle Club of America have already taken action favoring meetings here and practically all the organizations of cattle breeders will be represented in a series of special meetings to be held during the livestock competition.

The American Berkshire Congress and the O. I. C. Swine Breeders' Association have voted to arrange for meetings here and others are expected to take definite action at their [illegible] meetings.

Among the livestock organizations, [illegible] enthusiasm is manifested by the breeders of goats. The American Milch Goat Record Association, the American Angora Goat Association, the [illegible] Angora Goat Association, the [illegible] County (Texas) Angora Goat Association and the National Mohair Growers' Association are planning for meetings here.

A large number of poultry organizations will be represented and the poultry and pet stock exhibit will be large and varied. The Buff Minorca Club of America, the National Columbian Wyandotte Club and the American Buff Plymouth Rock Club have made preliminary arrangements for meetings here.

Most of the organizations connected with rural industry hold annual meetings quite late in the year and, therefore, a complete list of those which will meet in San Francisco cannot be given until near the end of 1914. However, those which are named in this article are sufficient to show the widespread interest in the exposition and to make it certain that the best methods will be emphasized and exemplified in the congresses and conventions that will be held.

LIME AS PLANT FOOD

A unique display of the effect of lime upon plant growth is being given by persons who cross San Francisco bay these days in a way that nobody ever planned or thought of. It brings to mind the plan of Benjamin Franklin in advising fertilization by fertilizing grass by outlining certain letters therein, the fertilizing lines showing better than the rest.

The lime display is upon the sides of Goat Island where the Portola Festival was advertised last summer in great letters of whitewash or some other form of lime. As the lime faded away in rain, fog and wind and winter's growth of grass came up the letters totally disappeared for the time, only to reappear again this summer, not as white lime, but as green vegetation.

During the winter and spring the side of the hill was all green, but as the grass reached maturity and the soil dried out a contrast appeared between the natural brown of untreated soil and the green growth where the lime letters had been. Whether it is the lime or not, the outline of the letters is clearly seen by increased growth and greener vegetation. It often is said that California soils are rich in lime, which is true, but the use of lime has proved so satisfactory that more is being used every season.

REMEDIES FOR STOCK

Mix lard and syrup half and half and apply to cow's sore teats when they get scratched or crack from cold. Apply after calf has been turned from cow and for caked udder bathe in warm dish water as hot as the hands can bear.

A colt got in barb wire and got its shoulder badly lacerated. We were told to apply red pepper freely to wound and it healed rapidly and flies did not bother.

A tablespoon full of common black gunpowder or a few balls of common bluing is good for a dog with distemper.—EMMA SMITH, Millville, Cal.

THE FARMERS' MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Incubator Chicks and hatching eggs—White [illegible] booklet of [illegible] Mahajo [illegible], P. O. Box 797, Sacramento, Cal.

Croley's Growing Chick Food [illegible] Write for [illegible] k. **Geo. H. Croley Co., Inc., [illegible]-637 Brannan st., San Francisco.**

Order Mammoth Bronze Turkey eggs [illegible] is a [illegible] **Crow's Landing Turkey Ranch, Box 227, Crow's Landing.**

We are making deliveries now on three-months-old White Wyandotte pullets; [illegible] limited supply. **Ormond Ranch, Corning, Cal.**

Buy your 1915 Breeding Cockerels and Drakes now and save money. White Leghorns, [illegible] and Runner ducks. **Broadview Poultry Farm, Puyallup, Wash. Dept. F.**

Baby Chicks—Orders taken now for S. C. White Leghorn chicks from vigorous free range [illegible]. Price $7 per hundred. **H. P. Hansen, R. 4, Box 177, Petaluma, Cal.**

Petaluma Hatchery — Now booking orders for fall. August, September and October chicks are highly profitable. Send for circular. **L. W. Clark, Petaluma, Cal.**

Trapnested White Leghorns—Bargains in cockerels from heavy layers; only $1. **Arthur R. Schroeder, box 22, San Gregorio, Cal.**

Barred Plymouth Rocks—"The kind that win and lay." Eggs for hatching and stock for sale. **Chas. H. Vodden, Box 693, Los Gatos, Cal.**

Colored Muscovy Ducks—Young stock, $3-$5 each, pairs $5-$10. **Mrs. Emma F. Reid, box 54, Senter Road, San Jose, Cal.**

Indian Runner Ducks; prize stock; fawn and white; 6 laying ducks $7; 3 very fine drakes $2 each; baby ducks 25c each; hatching eggs 75c dozen. **Mrs. Nutman, 295 Page st., San Jose.**

Albert M. Hart, Clements, Cal. (successor to Ed Hart), Mammoth bronze turkeys and eggs for sale. (Circulars.)

Incubators, Brooders, Supplies, Smith's Universal Chick Feed. Hogan's "Call of Hen," $2, prepaid. **F. F. Smith & Co., 1006 J St., Sacramento. Circulars.**

Ring-Necked China Pheasants for Sale—Also eggs in season. Address **T. D. Morris, Agua Caliente, Sonoma Co., Cal.**

RABBITS

Rufus Red and heavyweight Belgian, New Zealand Red and Black Flemish Rabbits; scored and sold on merit; latest catalogue free. **Caldwell Bros., Los Angeles, Cal., box 613.**

Thoroughbred Belgians, with or without pedigrees. **The Old Hickory Supply Co., Dept. 5, San Francisco and Los Angeles.**

High-grade Flemish giants. Cobrook Rabbit Company, P. O. box 354, San Jose, Cal.

BUSINESS CHANCES

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

AGENTS WANTED

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

TREES

For Sale—Nursery stocks, trees and vines coming next fall. **P. O. Box 45, I. Hasuwa, 1623 West Front St., Selma, Cal.**

Citrus Nurseries, Murphy Oil Company, East Whittier, California. Selected stock for sale; inspection invited.

MISCELLANEOUS—FOR SALE

[illegible] Brothers, Wreckers — [illegible] 1679 Market street, [illegible] Francisco, Cal.

Lumber and Millwork at [illegible] your [illegible]. We have on [illegible] of all kinds, [illegible] grades for [illegible] fences, etc. Better grades for [illegible] by 4 foot [illegible] stakes for trees and vines, $1[illegible] [illegible] and pipes; 4-inch [illegible] stakes for box covers $7.50 per [illegible] and delivered to coast or [illegible]. Mail us list of your requirements [illegible] up Market 7[illegible] when [illegible] Francisco, and we will call for [illegible] with machine to inspect [illegible]. **Christenson Lumber Co., 17th [illegible] Kentucky sts., San Francisco, Cal.**

Second-hand and New Water Pipe—Sizes standard pipe and wrought [illegible] screw casing pipe; guaranteed as g[illegible] as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Second-Hand Pipe—Largest dealer[illegible] standard pipe and screw ca[illegible] prices right; guaranteed first-[illegible] **Pacific Pipe Co., Main and Howard st[illegible]**

LIVESTOCK

Grape Wild Farm Thoroughbreds—Guernsey Bulls of Advanced Re[illegible]ter Breeding. Berkshire Hogs. Lar[illegible]est herd. Best Eastern strains. [illegible] ages for sale. **A. B. Humphrey, Pro[illegible] Mayhews, Sacramento Co., Cal.**

Buy the Children a Pony—The gre[illegible]test pet on earth to make a child ha[illegible] have all colors, a few snow white. [illegible] Shetlands are broke to ride and [illegible] by a 10-year-old girl. Write now. **J. Garvey, Thayer, Ill.**

Calves Raised Without Milk—Cost le[illegible] than half as much as the milk-rai[illegible] calves. Write for free book to **Coulso[illegible] Co., Petaluma.**

Tamworths—The big red bacon [illegible] block hog. Send for circular a[illegible] prices. **Cottle & Hobson Co., Amste[illegible]dam, Merced County, Cal.**

Mulefoot hogs are best for Pa[illegible] Coast. For information write **Jo[illegible] Dunlap, Williamsport, Ohio.**

Registered Duroc Hogs, $15, at wea[illegible]ing time. Out of champion ancesto[illegible] **Ed. E. Johnson, Turlock, Cal.**

Poland China Stock for sale, boars a[illegible] gilts; best strains. **D. M. Clark, A[illegible]lington, Cal.**

Pacific Guernsey Herd offers a few v[illegible] choice young bulls. **C. S. Rasmusse[illegible] Loleta, Cal.**

Registered Berkshires, $10, at wean[illegible] time. **M. D. Good, Mt. Vernon, Wa[illegible]**

BEES AND HONEY.

It Pays to Keep Bees and raise y[illegible] own honey on the farm; we can s[illegible]ply gentle Italian bees at reasona[illegible] prices any time; write for our f[illegible] catalogue of bees, instruction boo[illegible] supplies and fixtures. **Spencer Apiar[illegible] Co., box 11, Nordhoff, Cal.**

MACHINERY AND SUPPLI[illegible]

For Sale—Best 4-80 gas tractor; [illegible] condition. **Box 655, Orchard [illegible] Farm.**

EDUCATIONAL

Van der Naillen's. All Engineer[illegible] School; estab. 1864. **51st and Te[illegible]graph ave., Oakland, Cal.**

SITUATIONS WANTED

Young Man of 28, of good habits, wa[illegible] work on farm; good, homelike tr[illegible]ment more considered than wages. [illegible]dress **H. K., care Herman Helse[illegible] Sutter City, Cal.**

THE FARMER'S MARKET PLACE

REAL ESTATE

Santa Cruz County Ranch Bargains—$4,000 ranch for $3,150; ½ cash; 2½ acres; 2 miles east of Santa Cruz, on car line; new bungalow with finest plumbing; screen porch; barn, chicken house for 400; windmill, tank and tank house; 6-in. well; furniture, garden tools, 200 pullets, and all growing crops go. No. 2528C.

Income Orchard—41 acres, $150 per acre, ½ cash; 3 miles of town and R. R.; 23 acres 13-year-old Newtown pippin and bellfleur apples, 11 acres 2-year-old apples, 4 acres more can be cleared and cultivated; wood for own use; R. F. D.; well; school, 100 yards; land level; orchards nearby held at $1,000 per acre; best buy in State. **Send for free list of ranch bargains. Wilson Bros., Santa Cruz, Cal.**

Victoria, Australia, Wants Settlers—Special inducements; Government land, railways; free schools; cheap irrigation; 31 years to pay for farms adapted to alfalfa, corn, grains, fruit, etc.; climate like California; ample markets; reduced passages; special excursion next November. Free particulars from **F. T. A. Fricke, Government Representative from Victoria, 687 Market St., San Francisco, Cal., Box T.**

5 Cents an Acre Cash—Texas school land for sale by the State. You can buy good land for $2 per acre; pay 5 cents per acre cash and no more for 40 years, but 3 per cent interest. Send 6 cents postage for further information. **Publishing Co., Dept. 88, San Antonio, Texas.**

Let us help you buy your choice of overlooked bargains in every county. Some for less than one-tenth selling price of adjoining land. Write for free booklet that tells how and why. **California State Land Information Bureau, Sacramento.**

For Sale or Trade—Nothing down to the real, practical, energetic homeseeker who is able to make 20 acres of California's best land pay for itself. About 7 miles from Stockton, near traction line; only $150 acre. **R. S. Ebey, South San Francisco, Cal.**

For Sale; No Exchange—120 acres fine garden truck land with improvements 33 miles from San Francisco, near Mayfield; 5 artesian wells; dealers note; price $75,000. Details from **Hyxbee & Slocum, Palo Alto, Cal.**

For Sale—20,000 Acres Only $200,000—The best stock ranch in Southern California; plenty of water; place all fenced; located about 40 miles from a large city. Particulars from **T. P. Reid, 1429 Second St., San Diego, Cal.**

For Sale—500 acres splendid river bottom land, on the west side of the Sacramento River near Grimes. Well reclaimed. Price $250 per acre. Address **Robert D. Pike, 631 S. Spring St., Los Angeles, Cal.**

Money-Making Farms Everywhere—Deal direct with owner of farm you want; pay no dealers' commission; we send owners' name, address free. **National Farm Exchange, Oakland, Cal.**

C. M. Wooster Co., 25-year experts in land and mortgages; investors will save money and avoid errors by consulting them; land in all counties. **303 Phelan Bldg., San Francisco.**

We can sell your land — no matter where located, quickly; pay no commissions. **National Farm Exchange, Oakland, Cal.**

Ranches, homes, acres, lots, exchanges. Send for free list. **Wilson Bros., Santa Cruz.**

Irrigated Farm of 125 acres for sale; watered from Roosevelt dam. **Chas. N. Wirth, Peoria, Ariz.**

Buy from Owner—Two beautiful orchard homes adjoining Sunnyvale, Santa Clara county. **Box 6, Sunnyvale.**

REAL ESTATE WANTED

Farms Wanted. We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property Free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted to hear of good farm or unimproved land for sale. Send description and price. **Northwestern Business Agency, Minneapolis, Minn.**

HOUSEHOLD SUPPLIES.

"We Pay the Freight"—To reduce the high cost of living, send for our Wholesale to Consumer Catalogue. The Direct Supply Co. has combined with **us. Smith's Cash Store, 106 Clay St., San Francisco.**

SEEDS, PLANTS, ETC.

For Sale—Genuine Burbank Spineless Cactus cuttings, raised at Marysville, from slabs purchased of Burbank. Can furnish the following varieties: "Chico," "Monterey," "Santa Rosa" and "Fresno," at $15 per 100 slabs. Send for orders to **Darrow-Winchester Company, 1605 Telegraph Ave., Oakland, Cal.**

Spineless Cactus—Luther Burbank's 3 best hardy sorts: Robusta, Pyramid, and Competent; wonderful growers, nice, fresh slabs; each, 50c; 100, $40; 1,000, $300; cash with order. Address or call, **H. L. Bauer's Cactus Nursery, 4401 Hammell St., Los Angeles, Cal.**

Burbank's Spineless Cactus—For cattle, hogs and poultry; green feed all the year; secure the new Burbank Forage and Fruiting varieties; send for catalogue and price list. **J. I. Jewell, Santa Rosa, Cal.**

Burbank Spineless Cactus—I have some of the best varieties of Burbank's Cactus, which I will sell while they last for $15 per 100; order early. **Jerry Williams, 402 Amador St., Vallejo, Cal.**

Maltese, Sicilian and Spanish Spineless Cactus. For particulars apply to producer. **C. M. Johnston, 8703 A St., cor. 87th Ave., Oakland.**

Sour Orange Seed and Seedlings, 30,000 Eureka Lemons, 50c. Otis E. Hyde, 63 North Meredith ave., Pasadena, Cal.

Spineless Cactus—Best by test. Compare prices, etc. Write **J. L. Lawson, San Jose, Cal.**

ADVERTISING

In This Department of Orchard and Farm pays in results because the ads are watched by buyers all over California. If you have real bargains to offer, the 3 cents a word rate will find you many customers.

MARCHING.

"Left—right! Left—right!"
The teacher clapped her hands and said.
The children marched, but I just stopped,
And would not move, and hung my head.

And when the teacher asked me why,
I saw the children laugh, and said—
"I like to go the way I please,
Not in a line, and straight ahead."

So then the teacher said to me—
"To-morrow is a holiday;
Just watch the things of field and wood,
And see them march in their own way."

I got up early as the sun;
I ran and hid behind our hedge,
And saw high o'er me in the sky
The wild geese flying in a wedge.
And right down in our garden path,
The ants were walking in long lines;
And far away I saw the crows
Follow their leader from the pines.

I saw the geese go marching by;
I saw the sheep march down the lane;
Our colt kept by its mother's side;
I looked but did not see a rein.

Queerest of all—out in the field,
The brook flowed straight toward the mill;
The goldenrod stood stiff and tall,
And seemed to march right down the hill.

I wonder if they think it's fun?
Perhaps it is. So I will try
To make my feet go left—right—left,
With all the children marching by.

—Anna Schutze.

The farmer who looks upon his boy as a sort of working machine, and worth only the profit he can get out of him, is heading him straight away from the farm, provided the boy has metal of real worth in him.—Ex.

The Right Size for a Silo

Silos can well be constructed from this time until the material is ready to put into them in the fall. In fact, more will possibly be built just before or during time of filling, than previous to it. The greatest problem before those who expect to build silos is what size to have them. The builder does not want to have them too small, for then he will not have enough silage, and, furthermore, the silage will not pack as tight and he will go to a greater expense for each ton of storage capacity than he would on a larger silo.

On the other hand it is almost disastrous to build too large a silo, more unfortunate by far than to have too small a one. The reason for this is that a definite amount of silage must be removed every day, or it will spoil. Silage is a fermented product and will not stand exposure to the air for more than a limited time. The upper layer protects what is beneath so that ordinarily there is no loss when the surface is being continually lowered, but if there is not enough stock to cat off a great enough depth of silage every day, some will be exposed to the air too long and be ruined. In this case enough would have to be thrown out and wasted every day to keep fresh silage continually at the surface, or everything would be spoiled and unfit to eat. It is, however, quite easy to figure out the right size of silo so that such misfortune would not occur.

A cow will eat forty pounds of silage a day. Knowing the number of cows to be fed, one can tell just how much silage can be removed a day; then when the diameter of the silo is known that will provide no more than that amount, it is seen at once just how large a silo can be built. This is shown in the following table:

Diam. of silo.	Feed off daily.
10 feet	500 lbs. silage
12 feet	750 lbs. silage
14 feet	1,020 lbs. silage
16 feet	1,325 lbs. silage
18 feet	1,700 lbs. silage

Economy of storage depends upon the compactness of the silage. In a deep silo the pressure is greater and the feed settles more solidly, the air is more completely excluded and the silage is better preserved. Consequently the silo should be at least twenty-four feet deep. In no case should the diameter exceed sixteen or eighteen feet. Moreover, in the deep silo the expense for foundation and roofing is less in proportion to the capacity of the structure.

Of course, a person can feed off the silage as fast as he wants, emptying in three months what another dairyman would want to have for six. Each dairy or stock man can figure out how long he wants to have silage and gauge the size of his silo accordingly. After a certain size is reached, indicated above, it is better to erect other silos rather than to try to have a still larger structure.

As a means of deciding upon the size for any given place, the following table, showing the size of silos to feed from eight to forty-five cows for six months, the cows consuming forty pounds a day, will be of value:

Dimensions.	Tons Capacity.	Acres.	Cows Fed.
10x20	28	3	8
12x20	40	3	11
12x24	49	3 2-5	13
12x28	60	4	15
14x24	67	4 2-3	19
14x30	93	6	23
16x26	97	7	26
18x36	189	12 1-3	45

More will appear toward fall on the handling of the silage.

CROP CONDITIONS

(Continued from Page 6).

exchange for Oakland and city property. Buildings are being erected in various parts of the county at all times.

MONTEREY, J. B. Hickman—There has been no change in the prospects for deciduous fruits since the last report. Grapes appear to be setting well, but are very late. Oats are doing particularly well. Livestock is in good order. Much of it is ready for the market.

TEHAMA, Charles B. Weeks—Peaches show no change since last month and will give about 75 per cent of full crop. Prunes at this date will not make 50 per cent of a crop, as last report indicates; 35 per cent will be nearer right. Apricots made about 40 per cent. Pears will make 50 per cent of a crop, as the blight is not showing up very bad. Grapes will produce well. Prospects for grain are good and many harvesters are at work. The orchards this spring have received more than the usual amount of care and many irrigating plants are being installed with improvement of crops in every case.

TULARE, Charles F. Collins—Peaches, figs, grapes, apples, plums and berries are all normal or better. Apricots are being harvested and are about 90 per cent of a full crop. Oranges are dropping. Valencias will be short and navels may be before the drop is over. Grapes promise well, with Sultanas a little short. Hoppers are bad in some sections. Berries are a banner crop. Sugar beets are in excellent condition. The harvest will begin about July 1. Melons look well, but will be a little late. All kinds of grain are good and the harvest is now on. Feed is plentiful and livestock is looking well. The general conditions of agriculture and horticulture never were better and Tulare county is "a thing of beauty."

YUBA, G. W. Harney—Citrus fruits are in good condition and will give a normal yield. The grape crop is of fine quality and above normal in quantity. From 5,000 to 5,500 tons of Thompson seedless raisins will be produced in Sutter and Yuba counties this season. Cucumbers and tomatoes are yielding 20 per cent better than last year; there are being shipped 800 25-pound boxes of cucumbers per day by express. The season will last three months and 1,000 tons of cucumbers will be shipped from Marysville in 1914. Berries will give a normal crop, the quality being excellent. The grain harvest is on and the yield better than for five years. There is an abundance of feed for livestock, which is increasing in numbers.

The Durst hop fields will have the best and most sanitary camp in the State this year for the accommodation of hop pickers. Any one contemplating work on hops need have no fear but that the finest of treatment and accommodations will be accorded them.

THE MODERN WAIST LINE

The waist line is an imaginary ring around Rosie. For many years it lay in a dormant state. So quiet and demure it was, that Rosie herself hardly knew of its existence. Of late, however, the waist line has deported itself in a reckless and shocking manner. It has twisted itself into curious shapes, it has soared to Rosie's shoulders and swooped to her feet, it has coyly hidden in folds of bouffant drapery, suddenly to reappear and spread itself all over creation. We predict that such frivolous conduct on the part of the waist line, this self-appointed architect, can bring only sorrow and degradation. In fact, we shall be not one bit surprised if it is forced to spend its old age in the bread line.

Even when a fellow hasn't an idea in his head he remonstrates that there is plenty of room at the top.

Elimination of Unproductive Fowls

By Charles Weeks, Palo Alto

Care, selection and elimination are three of the things that are absolutely essential on any successful poultry ranch. And not the least of these is elimination.

Scientific care is required for every fowl on the ranch. Selection plays a wonderful part in mating up breeding pens and elimination makes every fowl on the ranch pay for its daily rations and some profit besides. Without elimination of the non-productive fowls the best care in the world will not place a poultry ranch on a profitable basis.

It is a pitiful sight to go on some poultry ranches and see the weak, thin breasted, peaked pilled poultry that is fed day after day and day after day until all the money is gone and no chickens worth disposing of. Some ranches may have to eliminate the entire flock to get down to a point where there is no loss in feed.

The knowledge of knowing just how to select the fowl that will pay for the daily care and feed is of first importance to all who keep fowls. Just how to select the fowl with constitution, vigor, stamina and egg producing powers is the question. It cannot be learned in a day, nor from books, but by careful training and observation right among fowls.

Young stock, to pay for their feed, must grow fast, so fast that you can almost see them grow from day to day. If you have those thin, light weight, slow growing kind, waste no feed on them, but dig a deep hole and put them where they cannot get at the feed. A slow growing chick is never profitable. There has been something wrong along the line either in incubation, brooding, or mating of the parent stock and ninety-nine times out of a hundred it is the condition of the breeding parent stock that causes the trouble. Get the breeders well selected, well fed and well exercised and of matured age and the chicks will inherit vigor and will grow fast. The slow growing chick in any pen is never profitable and the sooner it is eliminated the better. Chicks that grow unevenly in the same batch show the difference between well born and weak born chicks. The mating makes the difference and the runts are proof of poorly conditioned and poorly selected breeding stock.

Early in the year you say that you can almost see the chicks grow and so evenly, but later on the lots become so scrubby and weak and you wonder what the trouble is, and little think that the parent stock may be out of condition.

Slow growing, thin, scrawny chicks make poor layers even when they do happen to get through to producing age. Even the most vigorous, fast growing pullets need to be carefully culled over from time to time after they begin to lay, for some may be unproductive. How shall we tell the unproductive hens is the question?

The Leghorn hen should have a long body to start with; not short and dumpy. This should be like the Jersey cow, wedge shape, with plenty of capacity behind. They should be wide between the two pelvic bones that protrude from behind. Thick bones pinched together indicate a poor type. Also they should have depth between the two points of the pelvic bones and the point of the breastbone below. The broader and the deeper, the better the egg producing capacity. At the age when the pullets should be laying if they are not in the molt, say six months old, if they are not laying and are narrow and pinched behind and have long, slim bills and hollow cheeks and narrow heads they probably will never be profitable. If their sisters are laying under the feed and care and they should be laying and are not, then set them aside and test them out and save the feed.

All through their laying period the hens should be thoroughly gone over periodically and the deadheads culled out and marketed, for there are too many good hens to give place to a single one that does not pay.

It requires little time to keep the non-producers culled out and make every hen in a flock of a thousand a profitable hen. If you have the least cause to doubt a hen's ability to produce, get what you can for her then and there and stop her feed consumption. Some may get indigestion, some crop bound, some egg bound, some worn out, some too fat, some broken down, etc., and these should be disposed of instantly and not drag along day after day detracting from the looks of the entire flock and eating feed that might produce eggs. Rigid elimination will almost pay the wages of an extra man on any good sized poultry ranch.

When the breeding season is through unmate the pens at once and dispose of the male birds on that very day and do not waste one ounce of feed on them. Do not drag them through the summer season and in the end sell them for less than could be had early in the spring. They are lazy and yet lousy and are a nuisance to the hens, and eat and eat.

It will pay the amateur poultry man to get an experienced man to cull his flock periodically and thus avoid feed waste.

Leghorns That Show Fine Laying Qualities.

DOING THEIR BEST.

Little Margie had not been to the country before, and, getting lonesome, she was told she might go to the barn and look for eggs. Presently she returned without any.

"Couldn't you find any eggs, dear?" asked the mother.

"No. The hens were scratching all around as hard as they could, but they hadn't found a single egg," was the doleful reply.—Philadelphia Ledger.

The contented hen is the singing hen, and the singing hen is the laying hen.

RABBIT BAIT FOR HAWKS.

Very often hawks become a great nuisance about time young chickens are hatched and carry off many of the little fellows to make a meal when hungry. If there is a good many trees about the place they will sit around in the trees and watch for their chances to swoop down and steal a baby chick from the old hen or the brooder run.

A good way to catch them is by a rabbit bait. Kill a good size rabbit and lay him on the ground beneath a tree where hawks often light. On each side of the rabbit drive a stake into the ground and with a binder twine tie the rabbit securely to the stake so that the hawk cannot carry him away. Around the rabbit set two or three steel traps. As the hawk walks around his supposed prey he will get his foot into the trap, and snap goes the trap and he is your prisoner.—Exchange.

OUR
Baby Chicks
MAKE
Heavy Winter Layers

Chicks from a S. C. white leghorn strain we have been working up for 20 years. Write to-day (a postal card will do) for our special low prices for the next three months. These chicks will make heavy winter layers.

S. C. WHITE LEGHORN BABY CHICKS

Write to-day and get chicks for winter laying and excellent profits.

THE BIHN HATCHERY PETALUMA, CAL.

Largest in the World—Capacity 165,000 Chicks.

WEEK'S POULTRY RANCH

can supply egg farmers with four months old cockerels for next year's breeders at $1.00 each. Now is the time to get new blood at almost market prices, from large, vigorous, heavy-laying stock in WHITE LEGHORNS that have been bred for years for egg production.

CHAS. WEEKS, Palo Alto, Cal.

Protect Your Chicks

White Diarrhoea is fatal and very contagious. It attacks chicks the first five weeks and kills 60 to 75 per cent of all chicks hatched. May wipe out your whole hatch. Save your chicks by putting in their drinking water

CONKEY'S
White Diarrhoea Remedy

Chicks drink freely and doctor themselves. Don't take chances on losing your whole hatch. Keep Conkey's White Diarrhoea Remedy on hand as an effective treatment and preventive measure. Prices 25c and 50c.

Lice Eat Poultry Profits

Lice are responsible for many poultry diseases, poor egg records and great loss of profits. You can get rid of them quickly by dusting your fowls with

Conkey's Lice Powder

A combination of effective lice killing ingredients. Use it on setting hens now, because it Kills the Lice—Doesn't harm Chicks. Price—15 oz., 25c; 48 oz., 50c.

Spray your poultry house and paint the roosts with

Conkey's Lice Liquid

Thoroughly wipes out these pests that prey on your chickens at night. Qt., 35c; Half Gal., 60c; Gal., $1.00.

Guard your chicks against the deadly head lice.

Conkey's Head Lice Ointment

Kills them every time—doesn't harm chicks. 10c and 25c.

MONEY BACK IF NOT SATISFIED

Ask for Conkey's Practical Poultry Book—IT'S FREE

If your dealer cannot supply you, write direct to
THE G. E. CONKEY CO., CLEVELAND, OHIO

Egg-Laying Contest at Exposition

An Egg Laying Contest has been announced by the Department of Livestock at the Panama-Pacific International Exposition which will be one of the most attractive features of the whole show and of great interest to the poultry keepers of the country. The rules of the contest have recently been announced and may be had on application to the management.

The contest will begin on November 1, 1914, and continue for 12 months. The contesting pens will be each composed of 10 females of the same variety, in which the birds must be at least eight months old and not more than 11 months old on the opening day of the contest. A male bird may be included in case eggs are desired for hatching. The competition will be open to the world and all birds will be housed and fed alike.

Diseased birds will not be received and those which develop disease or vicious habits must be replaced with others of the same age and variety by the owner. Every care will be given the birds in the matter of feed and attention and every precaution taken against loss by disease or otherwise, but no responsibility for losses will be assumed by either party in charge of the contest.

Prizes will be awarded on performance and the total number of marketable eggs produced by each pen will be the basis of award.

The owner of the pen making the highest annual egg record will receive a trophy and $75 in gold; the second prize will be a trophy and $50 in gold; the third prize, a trophy and $25 in gold, and the fourth prize, $10 in gold.

The owner of the hen making the highest individual record will be awarded a trophy and $15 in gold; second prize, $10, and third, $5.

The owner of each hen making a record of over 200 eggs will be awarded an exposition trophy.

Trophies will be awarded each month to the pen making the highest record for that month.

All birds must have been bred by the exhibitor who shall be the owner at the time of the contest and who shall have owned the parent birds of the pullets entered and shown.

The entry fee is $25 per pen, $10 being required at time of application and the balance by October 15, 1914. Birds may be received by October 1, if owner so wishes, and must be on hand by October 30, in order to be ready for work on the opening day of the contest.

According to the rules announced, eggs for hatching from pens containing male birds will be the property of the exposition, the owner being given the option of purchasing same at $1.50 per 15 eggs. A great demand for the eggs is certain to develop and the owner by reserving the eggs at $1.50 per 15 eggs can ask whatever price he sees fit. Otherwise the exposition will sell the eggs at the price named to others in order of application.

The poultry show to be held at the exposition is being called the Greatest Poultry Show in the World. Everywhere poultry shows are becoming extremely popular. The fact that performance will accompany the display of fowls entering the contest is sure to make the contest the most popular part of the Greatest Poultry Show in the World.

Help in Marketing Eggs

Will you kindly give me some information on the marketing of poultry and eggs? I live 60 miles north of the bay cities, right on the railroad, but there are not any commission houses here handling poultry products. I would like to ship right into the city. Can you give me some idea to whom to ship through the columns of "Orchard and Farm," and also what will be the express charges for a case of eggs or a dozen chickens, etc.?—D. R., Vacaville.

Satisfaction in shipping eggs to city markets depends very largely upon the number of eggs that you have to ship. Eggs are handled in cases like an orange box containing thirty dozen, and except in cool situations it is advisable during the summer months to ship every other day. At that rate you see you should have about fifteen dozen eggs a day. However, this is not absolutely essential and a person can ship poultry products direct with a smaller flock than this. Small cases containing fifteen dozen eggs are sometimes used for persons with too few eggs for full sized cases. Then by having a cool cellar, or some other place where the eggs can be kept quite cool, shipping the eggs once a week may prove satisfactory. Otherwise you will probably have to turn your eggs in to the store at which you trade at the prices usually offered. This, owing to the carelessness of farmers in regard to eggs and the consequent inferior quality of the product, is usually very much less than city prices.

To get good prices from city dealers it is absolutely essential that only a perfect product be shipped. Keep out all very large, small, misshapen, discolored, or otherwise inferior eggs. They will be counted against you if put in, and no shipper can expect to get as fair prices when a certain proportion of every case are inferior. Uniform excellence is the rule to follow in egg shipments. Emphasis should be placed on this, as egg trade with others than professional poultry raisers is usually unsatisfactory to the dealers on account of the high proportion of eggs too stale, suffering from the heat, misshapen, discolored, etc. Thus you should kill all your roosters except in breeding season, provide clean nests, and gather the eggs twice a day, keep the eggs in a cool place until shipment and do everything else to insure and ship a good product.

While crooks are likely to exist among the ordinary produce commission merchants, those specializing on butter, cheese and eggs are almost invariably very fair and reliable and we can recommend almost any in San Francisco. Or, if you expect to ship more or less poultry, you could ship to a poultry commission firm. Can provide names if sent self addressed stamped envelope.

In regard to price—If you ship white eggs of good size and shape, so fresh that they will arrive in the city in prime condition, you will get full quotation price, less freight. This quotation price you will see in the market reports of every San Francisco daily paper. If you are a little careless about size, age of eggs, cleanliness of shell, etc., you will get probably 2 1-2 cents less than quotation at the least, possibly very much less. If you have brown shelled eggs of highest quality, you will get about 2 1-2 cents less than highest price for white eggs, and if your eggs are brown shelled and inferior in quality as well, you will get perhaps 8 and 10 cents less. At date of writing, for example, fresh extras are quoted at 24 1-2 cents. Chinese eggs can be bought for 17 1-2 cents, the price for inferior brown shelled eggs.

It is extremely unfortunate that the dealers seldom get good eggs on consignment from any one but professional poultry raiser, and on that account they dislike to have ordinary direct country trade, but it can certainly be said that you can get full price and full satisfaction if you ship a fine product, well handled.

As an incidental feature, not affecting you personally, seeing your location, it might be said that the utter abomination of the egg trade is the "grass egg," and anybody having such things should not ship them if he would be ashamed of the left-handed compliments that will be given him when the quality of the product is known.

A grass egg is an egg laid by a hen fed entirely on alfalfa or some other soft vegetation. A rotten egg can be recognized, but the grass egg may slip by, only to rival the rotter when opened after cooking. Alfalfa is one of the finest things in the world for California poultry when grain is fed along with it. If it is the only ration, the eggs are terrors. This is one of the reasons why eggs from alfalfa districts are likely to be unwelcome, owing to the habits of some farmers to let their hens pick up all their feed and having that entirely alfalfa. As in everything else—more than in most everything else—with eggs it is quality that counts.

As to cost of shipping, you can find from freight agents the freight charges on a crate of eggs. Would estimate it at 50 to 60 cents in your location, including return of crate. Charges will probably be the same for a half case as for a whole case.

If you expect to ship only a few fowls and that only occasionally, any comfortable crate you can knock up yourself will do. Otherwise you better buy regular shipping crates. Railroad agent will give you freight charges. Uniformity of age, size and condition is one essential feature in shipping fowls for best returns. The prices vary greatly in different seasons, just as they do with eggs.

The study of marketing problems is one of the greatest things for the producer. We will try to help out with more information if desired, provided only that it is of general interest to a large proportion of our readers. Things are getting under way in California for the building up of a trade in poultry and other farm products by parcels post. Such a trade can only be obtained by using the highest standard of honesty and quality of products, but direct trade by parcels post is another thing entirely from that spoken of above.

IN THE JUNK PILE

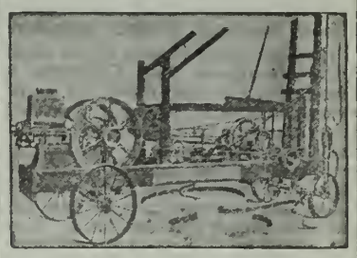
"That insulting young riding cultivator went by here this morning with such an important air," said the big and rusty riding cultivator as he leaned over a trifle closer to his nearest neighbor in the junk heap. "Why, in my young days—and I'm not so old as I look—there wasn't a better cultivator in the county."

"Oh, well," wheezed the old forge, "we did our best, but our master always thought that money was cheaper than work, so he preferred to buy new cultivators, plows and forges every year or so rather than give us a little care."

"That's just it," rattled the harrow. "There's my brother, John Harrow, owned by Farmer Smith. He is not a day younger than I, yet I saw him in the field yesterday, looking as bright and clean and strong as the day we left the factory. And all because Farmer Smith covers him with a good thick coat of paint every fall and puts him and all the rest of the machinery under a shed for the winter, while I am put into the junk pile."

"Well, I have good news for you fellows," said the old drill. "I heard our master's son saying this morning that if he was to run this farm he was going to do it in a business-like manner and that one of the very first things he intended to do was to come to the rescue of a lot of that good machinery in the junk pile. He said that about all most of it needed was a thorough scraping and oiling and a good coat of paint."—Kansas Industrialist.

The hen lays a larger egg than the pullet. To keep up the size of your stock, breed from hens.



WELL DRILLS

59 Styles and Sizes

Other machines may drill fast, but these drill faster and are sold at a reasonable price and under an iron-clad guarantee. Write for free catalogue and information about sanitary wells. The work is light, there is plenty of it, and no business pays better.

OSCAR DUNTON,
348 Brannan St., San Francisco

PENNSYLVANIA Oilproof VACUUM CUP TIRES

The stout, massive knobs of the suction cup tread grip deeper and hold better on soft roads. They wear longest over the rough going of country service. And in town they mean perfect safety from skidding on slippery pavements.

Guaranteed 4,500 miles — with records showing that their average life is far greater.

Absolutely oilproof through and through adding greatly to life of tires where there are oiled roads.

Dependable dealers everywhere

Pennsylvania Rubber Co.
JEANNETTE, PA.

Pittsburgh Detroit St. Paul
Minneapolis Cleveland
Chicago Omaha Seattle
Kansas City, Mo. Dallas
Boston New York Atlanta
San Francisco Los Angeles

NON SKID

An Independent Company with an independent selling policy

Reasons for Caponizing Fowls

How many fowls are caponized in California we do not know, but they are not numerous at the best of it, possibly owing to much of the egg production being from White Leghorn farms, where the males are rushed off to the market at the earliest possible opportunity and eggs are almost the only product considered.

Possibly more is said about caponizing oftentimes than California interest justifies, but there are certain strong factors in its favor that make it certain that some time or other the far larger part of the young roosters, especially of the heavier breeds, will have the same treatment accorded them that is given to all other meat animals raised on the farm. From the standpoint of meat production it is just as important to make a capon out of the cockerel as it is to make a steer out of the bull-calf, or a barrow from a young boar. It is pure waste to allow the young rooster to become staggy, just as truly as it is to allow the young boar, not needed for breeding purposes, to grow into a stag

Caponizing has the same effect upon the disposition of the male chicken that castration has upon the stallion. It renders him more tractable, less nervous and excitable, and so easier to handle from every standpoint. The true capon will not crow or fight, takes kindly to confinement, and will even brood chicks.

The performing of this simple operation also affects the amount and quality of the meat. As a result of its quieter disposition the capon is an easier keeper than the rooster. He makes greater gains than his active brother and makes them more economically. At the same time, his flesh remains as soft and palatable as when he was a two-pound "spring."

A ten-pound capon can be grown on about the same amount of feed that an eight-pound rooster requires. An eight-pound rooster will bring 64 cents, if the market is that high. Where capons are in demand, a ten-pound capon will bring twice as much per pound, or $1.60. His food cost is about the same as that of the 64-cent rooster.

This difference in price runs parallel to that of other meat animals. In the San Francisco market recently prime steers brought 7½ cents per pound and the best bulls only 4 to 5 cents. Young roosters were quoted at 24 to 27 cents per pound and capons therefore would be worth about 40 cents, once the demand and supply were both in good running order.

There are probably very few dealers who would not be glad to handle capons at a considerably higher price than they pay for old roosters, if they could buy them in any numbers.

Caponizing is a simple operation. Any careful person can soon learn to do it successfully. The fact that a bird's testicles are hidden away inside the body has caused most people to suppose that the operation of removing them is at once difficult and dangerous. While the percentage of loss is somewhat larger than results from the castration of the larger animals, it need not run much, if any, above five per cent for the beginner. One of the reasons why the number is as large as it is may be that the bird must be older, comparatively, than other farm animals before the operation can be undertaken. The birds that are killed die a quick and painless death by bleeding. They are not a total loss, as they are perfectly wholesome for food.

It is difficult to state the exact size or age at which a cockerel may be most successfully operated upon, as different birds develop differently. As a starting point, however, the beginner will be safe in using birds weighing between one and a half and two pounds if they are of the Plymouth Rock, Rhode Island Red, Wyandotte, or Orpington breeds. Leghorns weighing a pound may be used also. Later, as one becomes more familiar with the matter, the birds will be selected by their "look" rather than by weight or age. The proper time is just before he begins to make comb.

Considering the greater gain in weight for food eaten and the much higher value of the fowls by weight, and other things in its favor, caponizing is a plan well worth trying. Details and methods can be obtained from Government bulletins and with the tools when purchased.

Since preparing the above we have received a communication on methods and benefits of caponizing from George Beuoy, Cedar Vale, Kansas, who says, in part:

Capons are the most profitable part of the poultry business. Half the chicks raised each year are male birds and the only profitable way that I have found to dispose of them is to make capons of them.

Capons sold on the open market bring from 15 to 25 cents per pound, live weight. It is easy to make them weigh ten pounds each, which means that you will get from $1.50 to $2.50 apiece for them, and you can sell them all in a bunch and get the money in a lump sum, which is a big item.

Our capons have made us a net profit of over $1 each for the last six years. They will do just as well for any other poultry raiser, which means from $200 to $300 more profit on every farm where they are grown.

I have made a study of the capon business for the last eight or ten years, as raising poultry is our business and not a side line. I saw long ago that I must cash in on the male half of the flock in order to make a profit. I soon saw that to make capons of them was the only profitable way The demand for unfertile eggs makes it absolutely necessary to either caponize or separate the young males, and it is much easier and more sensible to caponize The man that caponizes will make enough clear profit on his unfertile eggs to make it well worth while to caponize for that reason if for no other.

MILK CURD FOR FOWLS.

The demand for skim milk is such as to keep little of it from going to waste. In case any is wasted, as from creameries, the Idaho Experiment Station advises that the curd be used for poultry. By heating sour skim milk to 180 degrees the curd will be thrown out in an easily drained form. This can be sold for about three cents per pound wholesale for the feeding of chickens.

The high protein and ash content of the skim milk curd makes it a concentrated feed. It approximates the feeding value of beef scrap for chickens, according to the station poultryman. Beef scrap costs about five cents retail and three and one-half cents wholesale. From this comparison one can see the nutritive value of this simply prepared food for the use of chickens.

VISIT TO WEEKS' RANCH.

On July 9 the members of the Santa Clara Valley Poultry Association are to visit the ranch of Chas. Weeks at Palo Alto, holding their regular meeting at that place. The topic will be, feeds and feeding of poultry, and there will be demonstrations in cutting green feeds, grinding grains, mixing feeds, irrigating poultry yards, fattening market poultry, dressing market poultry, etc. Everyone interested in poultry has been invited to be present.

MOULDS FATAL TO POULTRY.

By H. L. Kempster.

Mouldy litter in poultry houses and mouldy feed are the cause of a large number of deaths among poultry and particularly among chicks These moulds taken into the body of the fowl cause a disease known as Aspergillosis. The disease is as fatal as the name sounds. Our scientists have neglected to find a shorter name for the disease, but among poultrymen chicks affected with the trouble are commonly spoken of as "lungers." Many times the disease is mistaken for white diarrhea The chick stands around in a drowsy manner and shows little desire to eat. The wings hang down, the breath is rapid and a white diarrhea is present

An affected chick will be found to have soft, yellow growths from the size of a pinhead to that of a pea, mainly in the lungs, but sometimes in the intestines and mesentery. These growths, clogging the air passages of the lungs, are directly responsible for the death of affected birds.

In mature fowls there are two forms of the disease. The mucous membrane lining the air-sacs and tubes may be covered with a membranous formation which is soft and yellowish and has an offensive odor, or the post mortem will reveal white or yellowish nodules imbedded in the tissues of the lungs.

Early symptoms are that the bird is inactive, sleepy and, if forced to run, will fall from exhaustion; breathing is rapid, appetite is diminished and more or less catarrh is present.

There is no cure for the trouble, but since it is caused by eating mouldy feed or by being permitted access to mouldy litter, it can be entirely prevented by not compelling fowls to eat mouldy food and by keeping them away from mouldy litter.

This is just one of the many poultry troubles that can be entirely avoided by feeding nothing but fresh, clean feed and keeping the pens and yards free from filth and moulds.

A POULTRY PROBLEM

CACTUS FOR CHICKENS—Please advise me through the Orchard and Farm as to the value of spineless cactus for chickens. Is it good for them, and if so, will it take the place of kale?—W. S., San Leandro.

We have no authoritative information on this subject to enable us to answer your question positively, but do not think that the chickens would care to make cactus slabs a substitute for kale. The two materials are a good deal unlike in quality, as the kale is of cabbage texture and nature, while the cactus is rather mucilagenous, that is, it has rather a gummy substance through it. Now, fowls might like cactus immensely in spite of the difference, but not having and definite information on the subject would suspect that they would much prefer the kale. This comparison refers entirely to the meaty part of the slab. A different story might be told of the rest of the plant.

There are some kinds of cactus that produce an immense amount of fruit, which from all accounts appears to be excellent for poultry. Much of its food value must come from the seeds, and although it might have a considerable value as green food, that would be secondary to its part in providing nourishment in about the same way as grain, but in minor degree, of course. Therefore, until more information develops on the matter would be inclined to believe that the cactus, whatever its value for poultry, would hardly be a substitute for kale. If any of our readers have had experience with cactus as a poultry food, they doubtless would perform a service to other readers by giving results of their observations.

EGGS IN HOT WEATHER.

Much is said about the rooster as a spoiler of eggs in hot weather. Much is also said about keeping milk and cream sweet in hot weather, but leaving out the rooster question, little or nothing is said of the care of eggs in this season, and something from the Missouri Experiment Station on this subject may be found useful here in California.

Statistics show that during the summer months from one-fourth to over one-half the eggs produced in Missouri are a total or partial loss.

Heat is directly or indirectly responsible for a loss to Missouri farmers of two and one-half million dollars' worth of eggs annually. Heat causes germ growth, embryo and mould development, increases evaporation and causes eggs to become bad in a very short time. April eggs are high in quality because of the lower temperature which prevails at that time

Nearly all of the loss in eggs due to heat can be avoided by the ordinary conveniences that the average farm provides. If farmers would take the same care of eggs that they do of butter before and during the time it is taken to market, there would be practically no loss from heat. Any temperature above 70 degrees is too warm. Even under the best of conditions eggs should be taken to market at least once each week.

Eggs should be collected daily and should be cooled as quickly as possible. A sweet, fresh basement which is cool or a cyclone cellar makes a satisfactory place to store eggs. They may also be kept cool by placing them in a bucket lowered into a well. Avoid storing them in musty basements and keep them away from flies.

If these directions are followed and eggs are carefully protected from heat while being taken to market, the value of Missouri's egg crop may be increased two and one-half million dollars during the next four months. Eggs collected from the average farm in California during summer are very inferior in price and quality also and the amount of saving would be very great also.

COST OF KEEPING HENS.

I should like to know what would be considered a fair average cost per head (either weekly, monthly or yearly) of laying hens on an egg farm, where the farmer grew his own alfalfa and kale, and also the cost where he had to buy all his green stuff. If you could get the opinions of some of your readers on the subject, I am sure it would be very interesting to others besides myself—F. F. W., San Francisco.

This query was received too late to forward to Charles Weeks, our poultry writer, and receive a reply this issue. We will have an answer from him for next month and hope also that readers will volunteer some information on the subject as our correspondent suggests.

HOW TO OPEN A BOOK.

Lay the book, back downward, on a table or smooth surface. Press the front cover down until it touches the table, then the back cover, holding the leaves in one hand while you open a few of the leaves at the back, then at the front, alternately pressing them down gently until you reach the center of the volume. This should be done two or three times.

Never open a book violently nor bend back the covers. During the process of binding a book, the back edge of each group of leaves is covered with glue. Then a lining, or in a tight backed book, the cover is pasted over this glued back. If the book is opened quickly or roughly the glue cracks, the binding is injured and in some cases the leaves are weakened. This means that the life of the book is lessened and in some instances that it is ruined.

Epistles of an Automobile to Its Maker

By Thomas Howard—Epistle I

—An Automobile, slave to the eccentricities and peculiarities of man, manufactured according to specification and catalogue a 1914 Roadster.

—Unto the Factory which created me, Peace from troublous owners and improvement makers.

—I thank three, Oh, Factory which designed me, with a sincere and true gratitude, that there be few parts in me to adjust or regulate.

—For the way of the unthinking be unpardonable, and of many who consider my parts, beyond believing.

—So the perplexities of the amateur be amazing.

—Thus am I persuaded thine unfeigned belief in mine ruggedness will be uplifted as thou readeth these writings.

—It is unneedful I put thee in remembrance of the day thou consignest me unto the box car to journey unto the State of California.

—To be transferred unto thine agent when he should have paid the Sight draft on my Bill of lading.

—For I was sold long ere thine Agent delivered me unto his demonstrator to teach mine owner the commandments of Autodom.

—Saying, Keep all the commandments which he shall command thee this day and thine days shall be long in the land and thine repair bill small.

—Then the demonstrator taketh me out with mine owner and with a quick hand demonstrateth the usages of mine spark, gear shifts, brakes and other controls.

—Which appeareth simple.

—And he saith, These be the commandments writ in the ethics of Autodom.

—Advance not the spark when thou cranketh the engine, lest thou imagine a mule kicketh thee.

—Place gas in the tank, for the engine requireth sustenance in its work.

—Remember that thou fillest the radiator with water, for peradventure the engine grow over feverish in its labors.

—Spare not oil for the engine or its transmission, seeing the grease cups be filled, for the auto objecteth to such neglect in its moving parts.

—And before thou crankest the engine forget not the switch, for an electric spark giveth life to the engine.

—Release the clutch when thou shifteth gears, lest thou grow hurt at the price of thine repair bill.

—And when thou travelleth, keep right, observing the laws of the community through which thou passeth, for the speed cop loveth the ordinance breaker.

—Buy gauntlets for thine hands and a soft hat for thine head, using gas an oil for thine perfume, for these things betoken experience.

—And in the privacy of thine own room practice contortions under thine own bed, so canst thou crawl under thine car in public with a becoming grace.

—And another commandment give I unto thee. Whensoever thou meeteth an acquaintance speak of My Car, lest he mistake thee for a poor white.

—Then he giveth mine owner the book of instruction with a list to my repair parts.

—Now the name of mine owner was John Stark Jones, which he changeth unto John Spark-Jones, hyphenating the Spark to the Jones, so men mistake not his importance.

26—And he studieth the book of instruction until the setting of the sun.

27—And learneth the thousand little kinks affecting the smooth running of mine anatomy and the remedies therefore.

28—So, Oh, Factory, thou crowneth the sale with an information which leaveth nothing to the purchaser's imagination.

29—Providing he pasteth thine instructions on his wind shield, a ready reference in time of trouble.

(To be continued.)

Copyright, 1914.

HOME-MADE FIRELESS COOKER.

A fireless cooker which will save time and fuel may be improvised at home without difficulty. A deep box with cover or a trunk may be used, or an excellent cooker may be made easily from a sugar barrel and excelsior. They have been made in a number of domestic science schools and are used for cooking hams, tongues, etc., and for making soup stock for the lunch rooms at Chautauqua.

After loosening clean excelsior, pack about eight inches firmly in the bottom of the barrel. Place a fifteen to twenty quart pail in the center and pack excelsior very firmly around it even with the top. A sack of bed ticking filled with excelsior or other material to place over the top completes the cooker. The excelsior mats so well that the pail may be removed a large number of times and replaced without the necessity of repacking. The pail should have a good tight cover.

One or two shallow dishes can be placed inside, supported by a wire strand, so that the cooker can be used for several things at the same time.

A flour barrel would serve equally well for making a small cooker containing a ten or twelve quart pail. One lady made a very successful cooker in a corner of the window box in her kitchen. All fireless cookers must be opened for airing and drying, otherwise they become musty.

Any non-conducting material will serve, such as fine hay, excelsior, feathers, sawdust or even crumpled newspaper, as a packing.

THE SLEEPY SONG.

As soon as the fire burns red and low,
And the house upstairs is still,
She sings me a queer little sleepy song,
Of the sheep that go over the hill.

The good little sheep run quick and swift,
Their colors are gray and white;
They follow their leader nose to tail,
For they must be home by night.

And one slips over and one comes next,
And one runs after behind,
The gray one's nose at the white one's tail,
The top of the hill they find.

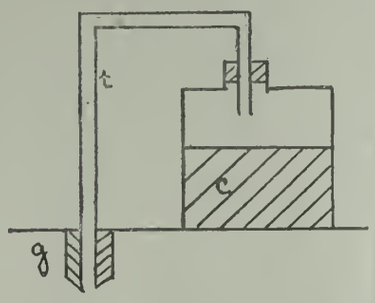
And when they get to the top of the hill
They quietly slip away,
But one runs over and one comes next—
Their colors are white and gray.

And over they go, and over they go,
And over the top of the hill,
The good little sheep run thick and fast,
And the house upstairs is still.

And one slips over and one comes next,
The good little, gray little sheep!
I watch how the fire burns red and low
And she says that I fall asleep.

A GOPHER SUGGESTION.

Get your druggist to fit a large-mouthed gallon bottle with a bent glass tube as per figure. Stop up all the gopher holes in the immediate vicinity except one. Place the end of the tube in this one and pack the earth into the hole around it. Fill the



bottle one-half full of commercial potassium cyanide such as is used for fumigating trees. Add enough commercial concentrated sulphuric acid to soak it well. Quickly place the cork, containing the other end of the glass tube, on the bottle and leave over night. The interaction of the potassium cyanide and the sulphuric acid forms hydrocyanic acid, which is death to any living thing. By this method it should not cost over $1 per acre to free your farm from these pests.—RICHARD G. PLACE, Pasadena.

In the above illustration, c shows the potassium cyanide and the sulphuric acid; t the tube; g the gopher hole, with soil packed around the tube to prevent loss of gas.

Editor's Note.

A number of very important things should be spoken of regarding above suggestion. Persons unfamiliar with the use of cyanide need to be told that it is an extremely deadly poison, the fumes also being very poisonous. Thus it is necessary to cover a receptacle immediately when the cyanide is put into the sulphuric acid. Whether it could be covered rapidly enough with such an apparatus as described we don't know, there being a chance for considerable loss of gas in case of delay, even though the danger might with care be small. Incidentally it can be said that the standard method of generating hydrocyanic gas is to have the sulphuric acid in the bottle or jar, then adding the cyanide in a paper parcel, rather than proceeding in reverse fashion.

For another extremely important feature, there is nothing to force the gas through the holes except what gas is formed in the bottle and we are doubtful just how good a distribution that would give. That is one way that the new methods of killing squirrels and gophers is superior to the above or to the old way of simply pouring in a little carbon bisulphide, or using a rag soaked in same. The new fumigation methods force air all through the holes, carrying enough poisonous fumes to kill the rodents, or otherwise providing pressure to fill the holes with poison, which is better by far than simply letting poisonous fumes in strong concentration find their way around as best they can.

There is no doubt, however, that the cyanide gas would kill any gophers breathing same, but before advising use of above we would like to be sure that it was cheaper, better and more effective than other ways of gopher killing by fumes, told of in May issue and in Farm Problems page this issue.

SUGAR 2c a lb.

CALL FOR COMBINATION ORDER NO. 100.

Our Best Seller

25 lbs. Sugar (fine dry granulated)	$0.50
2 cans of Oysters or 2 lbs. of Prunes	.25
1 sack of Rice or 3 cans Carnation Milk	.25
2 cans Corn, Tomatoes or 6 bars best Laundry Soap	.30
3½ lbs. Small White Beans or 3 lbs. Lima Beans	.25
2 lbs. Tea, any flavor, or 3 lbs. fancy Coffee	1.00
1 large bottle Flavoring Extract, or 2 lbs. best Coffee	.75
3 pkgs. Seeded Raisins or 1 bottle Tomato Catsup	.25
2 cans String Beans or 2 cans Maine Corn	.25
3 lbs. Macaroni, Tapioca or Rice	.25
3 pkgs. Washing Powder or 3 cans Cleanser	.15
1 2-lb. square best Butter or 1 No. 5 pail Pure Lard	.65
1 lb. Fancy Prunes or 1 pkg. Liza Pancake Flour	.15
Total for all unchanged	$5.00

SEND FOR OUR MONEY-SAVING CATALOGUE ON GROCERIES

French Castile Soap, per bar	$0.30
Strawberry Jam, large jars, each	.20
3 cans Carnation Milk for	.25
Tomatoes, 2 cans 15c.; dozen	.90
Sugar Corn, 2 cans 15c.; dozen	.90
Babbitt's Best Soap, 6 for	.25
Old Dutch Cleanser, 2 for	.15
Sliced Pineapples, 2 cans	.25
Asparagus Tips, per can	.10

A Free Trial Order will make you one of our many well-satisfied Customers.

FREE DELIVERY ACROSS THE BAY. MAIL ORDERS A SPECIALTY. PROMPT SHIPMENTS.

FREESE & CO.

Phone West 25
1260-66 Divisadero, Corner Ellis
San Francisco

LOW PRICES ON

Building Material

These are only a few items listed in our 130-page book of Lumber Bargains:

8x10 8-lt. windows, glazed ---- $0.85
2 ft. 4 in. x 4 ft. 6 in. windows. 2-lt. glazed ---------- 1.40

2 ft. 8 in. x 6 ft. 8 in. 1¾ Oregon Pine doors 1.50
Sash Door, 2 ft 6 in. x 6 ft. 1¾ Oregon Pine, lake cut glazed -- --- 2.65

There are hundreds of other bargains. All New. No Wreckage. Write us before you buy.

CONTRACTORS AND BUILDERS' SUPPLY CO.
5th and Cypress Sts.
OAKLAND, CAL.

A RARE OPPORTUNITY

I will visit all Eastern Fairs this year for the purpose of buying pure-bred Live Stock for California breeders. I will also personally select specimens of the different breeds for the purpose of strengthening California Herds and Flocks at the Panama-Pacific Exposition. Correspondence invited. Address

W. M. CARRUTHERS, 721 HEARST BLDG., SAN FRANCISCO

The Household Exchange

The suggestion for this month that simple household remedies, of old time or recent development, be given has apparently met with much favor, judging from the number of excellent remedies that have come in. At least it is to be hoped that the remedies are as good as they are said to be, for no one could be asked to experience all the ailments for the sake of seeing how suggested cures would work out.

For August we will ask for suggestions upon the use of fruit in the house, including canning, preserving, use of fresh fruit and other kinds of uses which would naturally come under the above classification. Our method of making awards will be as it was this month.

When sending in these suggestions the following rules must be observed:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only, and sign name and address after each suggestion.

Not more than two suggestions a month may be sent by one person, and only one award will be given to one individual in a single month. Do not send a letter with your suggestion. The suggestion itself is enough.

Address all your suggestions to Household Editor, "Orchard and Farm," Hearst building, San Francisco, Cal.

As is usual, five suggestions have been selected for special mention and to the authors of the first two of these are given a spring balance, to the next three a food chopper. Others are given small articles of value in the home.

These suggestions follow:

Cure for Eczema.

The following is an old but sure cure for eczema: Two ounces yellow poplar, two ounces wild cherry bark, two ounces quaking asp, two ounces spikenard, two ounces elecampaine, one ounce dogwood, one ounce rattleroot. Boil in six quarts of water until it boils down to about three quarts. Strain and boil down to one quart. Add two pounds crushed sugar. When cold, add one pint of whisky. Dose is one tablespoonful after each meal. Use this syrup one week before using salve given below:

Rc. Venice turpentine, pulverized rosin, red precipitate. Simmer five hours and add one pound of unsalted butter. This is to be made in a stone crock and stirred frequently with wooden stick. Destroy crock and stick, as the mixture is poison. — AMELIA APPERSON, Vallejo, Cal.

Tuberculosis Cure.

An unexcelled remedy for tuberculosis and within reach of every home is to have the butcher save blood from freshly killed beef and try taking one-half pint daily accompanied by one quart of fresh milk, and as many raw eggs as possible. With plenty of fresh air both night and day, this remedy will cure most obstinate cases, but must be continued several months. The beef blood enriches patient's blood to such an extent that the good bacilli are strong enough to subdue and kill the tubercular bacilli. — MRS. R. F. BRANTLEY, Orland, Cal.

Grandma's Bottle.

This prescription for hives and torpid liver has been in Grandma's family for many years. Take one tablespoonful of senna leaves, one tablespoonful each of the bark of sassafras and sarsaparilla; pour over one quart of cold water. Simmer slowly and strain, bottle and keep in a cool place. The dose for an adult is one tablespoonful morning and night. This will cure hives and torpid liver, also keep the complexion clear. There is no need of sending for a doctor if this is kept on a shelf in the pantry and used by all the family. — MRS. H. C. WOOD, Hayward, Cal.

Cherries and Milk.

The sickness caused by eating cherries and drinking milk can be cured by simply giving cheese (Eastern preferred). The juice of the cherries causes the milk to form a hard cake, which the cheese dissolves. A doctor used this and demonstrated its effectiveness in a neighboring town.—MRS. S. C. CHEADLE, Berros, Cal.

Poison Oak.

Now vacation time is here, if those who suffer with poison oak will take a pound of Epsom salts with them and remember to dissolve a tablespoonful in a pint of water and bathe the exposed parts with the solution, they will be delighted with the result. Another way would be to have the solution in a bottle handy to use. Of course, the main thing is to remember to use it. If you forget and the eruption breaks out, gather manzanita leaves, or coffee berry leaves, and make a strong tea and bathe the eruption frequently. Both grow near poison oak. These simple remedies are better than any drug store remedy and you will say so if you try them. — MRS. IRA HULBERT, Auburn, Cal.

Mint for Nervous.

Mint has many virtues, and a few vices. The leaves pulled from the stem, slightly mashed and boiling water poured over, there results a "mint tea" that is a sovereign remedy for nervous as well as stomach troubles. Served in a thin glass with cracked ice and a little sugar, it cools and quiets the system generally. In preparing the mint tea the bowl is kept closely covered until the contents are cool; then strained, poured into a bottle that can be closely corked and set on ice. When wanted ice should be pounded very fine and a little sugar added if liked. It is good, also, if you don't have ice.—MRS. THOMAS LEWIS, Bozeman, Mont.

Nausea.

When nausea does not yield to ordinary treatment put a cold cloth on the head and a hot one on the stomach at the same time, and very soon the stomach will retain medicine or light food.—MRS. J. L. BEVERS, Oleta, Cal.

Common Home Remedies.

Laundry soap and sugar mixed together will draw a boil to a head. Grated Irish potato applied to burns is cooling and draws out fire. Change as it warms. Strong saleratus water applied several times a day will kill or remove warts. The lining of an eggshell will also draw a boil to a head. Soak tender or tired feet in strong, hot salted water and you will get relief. — EMMA SMITH, Millville, Cal.

Neuralgia Treatment.

Wrap a hot flatiron in woolen cloth and soak in a dish of vinegar until saturated. Put patient to bed and steam affected part with the hot iron. Cover up very warm. Take one tablespoonful of tea made from common bull thistles after each meal.—MRS. ALFRED L. BATY, Cedarville, Cal.

Onion Remedies.

An application of crushed onions to burns extracts the fire.

Onions afford a remedy in bronchial affections and croup by being made into a syrup and taken in teaspoonful doses three or four times a day, or oftener, if the case is severe. Onions prevent constipation.—MRS. J. B. JACOBS, Vacaville, Cal.

Do You Want a Set of Dishes FREE

Even if you are supplied now—you should have need of a new set soon. So write us about this offer of a

36-Piece Dinner Set Without Cost

This set has a gold decoration, and was selected from hundreds submitted. It is acknowledged by all who have seen it as the best ever put on the market.

This Offer Is Made to Women Readers of Orchard & Farm

Write for full particulars how to get the Set of Dishes Free.

ORCHARD & FARM

Hearst Building San Francisco

Treatment for the Baby.

A weak solution of boracic acid is an excellent wash for baby's sore eyes. Dissolve the acid in boiling water and let cool. Give baby castor oil for diarrhoea. It will check it before it runs into cholera infantum. Syrup spread over the burn on baby's finger nearly always allays the pain at once and is very handy. A pinch of sugar put into baby's mouth will stop hiccoughs. For the croupy child put some turpentine on a cloth and pin to child's night dress so it will be inhaled. This is better than putting on breast. Cold sage tea is good for a child that is bothered with worms.—MRS. ALFRED L. BATY, Cedarville, Cal.

Infant's Sore Mouth.

To prevent and cure infant's sore mouth wash mouth out every morning with soft cloth and cold water. Mix equal parts (small quantities) of granulated sugar and baking soda. Put small pinch on baby's tongue twice a day.—MRS. E. L. PERRY, Sonoma, Cal.

Ointment for Burns and Scalds.

Olive oil or lard two ounces, spirits of turpentine one ounce; mix thoroughly. Apply this to any burn or scald and the pain and inflamation will be removed immediately.—MRS. C. R. FIELD, San Jose, Cal.

Cholera Morbus.

In cases of severe cramps from cholera morbus a mustard paste mixed with white of an egg to prevent blistering) applied to the abdomen will relieve at once. At the same time administer some good cholera mixture.—MRS. J. L. BEVERS, Olita, Cal.

Membranous Croup.

Give the patient a warm bath. Put a small piece of quicklime in a little water in a pitcher and place it so that the patient can breath the fumes. Do this at quarter-hour intervals. The inhalation of the fumes from a cloth saturated with a mixture of salt and vinegar is said to be equally effectual.—MRS. J. B. JACOBS, Vacaville, Cal.

External Use of Quinine.

Quinine is unpleasant to take and often leaves the head and ears buzzing, sometimes impairing the hearing when much is taken. Quinine is essential for colds, but will do its work just as well from the outside as in. In proportion mix one teaspoonful of quinine to two teaspoonfuls of pure lard (which is more penetrating than any oil or even vaseline). Rub on affected parts and cover warmly. Quinine opens the pores, so never go out of doors while using it, as it creates perspiration, which draws out cold, pain and inflamation.—MRS. THOMAS LEWIS, Bozeman, Mont.

Epsom Salts.

Few know the value of epsom salts in the house. Mix one ounce of salts to sixteen ounces of water, and keep on hand. For burns of any kind apply cloths wet in the solution. It will relive the pain and prevent blistering.

For snake bite, open the wound and bleed freely and apply cloths wet in the solution and give internal treatment, which consists of dissolving equal parts of salts, sugar and boiling water and let stand until cold, then give teaspoonful every hour. For appendicitis apply cloths wet in the solution at seat of pain and give the salts as above inwardly

Rheumatism, neuralgia pains and tired and aching muscles, and the aches of the grippe can be relieved by taking a teaspoon of the epsom salts to a pint of hot water as hot as can be borne. — MRS. A. L. JOHNSON, Oakland, Cal.

Do Without Yeast.

A severe case of indigestion or dyspepsia may frequently be cured by abstaining entirely from the use of breads containing yeast. When the stomach is in bad condition the yeast continues its fermentation after the food is eaten, with the uncomfortable results so well known to every dyspeptic. Baking powder biscuits and breads, as well as crackers, may be eaten. This suggestion was given me years ago by the manager of a sanitarium, and its worth has been proved many times by myself and friends. It has cured several chronic cases of long standing. Certain unleavened breads that are very palatable are easily made, for a change.—MRS. BESSIE M. LILL, Oxnard, Cal.

Queer Things About Queer Fish

In the matter of teeth fish have not all been treated alike. It hardly seems fair that the river dolphin of South America, for instance, should have two hundred and twenty-two teeth, while the sturgeon has none at all. But, as most children know, there are some ways in which the sturgeon, toothless as he is, is better off than the dolphin. He never can suffer from toothache, and when eating his luncheon or breakfast he is not compelled to waste his valuable time chewing his food, nor does he ever have to attend the submarine dentist's for the purpose of having his teeth filled, which in itself is ample compensation for the plain appearance he presents when he smiles.

Another marine being that is plentifully supplied with teeth is the sea-urchin. On land an urchin is a small boy with an upper and a lower jaw, and usually a full set of teeth, though sometimes one or two of the front ones are not to be found after the land urchin has played two or three games of baseball, or tried to ride his big brother's bicycle; but the sea-urchin is an altogether different creature. He does not resemble in the lightest particular a land urchin, but has more of the appearance of a toadstool without a stem, with a large number of splinters sticking into it. The dictionary says that the sea-urchin is an echinod, and no doubt the dictionary tells the truth, but this does not affect the fact that he is the proud possessor of five jaws, in each one of which he has one tooth.

Curious Jaws.

A strange thing about the sea-urchin is that, with all his jaws, he is utterly unable to speak, and even if he could, it is doubtful if any one could hear what he said, because he keeps his jaws inside of him, near his stomach. Persons who do not like the sea-urchin call him a sea-hedgehog, but as he never reads what these people write, or hears what they say, he does not mind this; indeed, he prefers that people should not like him at all, because the only ones who ever did take a fancy to him were certain Indian tribes who cooked and ate him, which was very unpleasant for him.

The carp carries his teeth back in his throat, so that when he has a sore throat, he does not know whether to send for the doctor or the dentist. He resembles the cow in the respect that he chews his cud. It is a pity that some of the other virtues of the cow do not also pertain to the carp, for he would be a much more useful fish if this were so, although it would not be possible for him to give milk, as does our good bovine friend, owing to the certain destruction of every drop of it by the river in which he lives, and which, as many of the readers of this paper know, is full of water.

Strange Mouth.

The horseshoe crab chews its food with its legs, which is a very curious thing even for a crab to do, while the oyster feeds with its beard. The oysters would starve to death if they had to wait as long as little boys and girls do for their beards to grow; but fortunately they have to do nothing of the sort, although, to tell the truth, the oyster's beard is hardly more perceptible than that of the smooth-faced little boy or girl in the world.

The jelly-fish hasn't any teeth, but uses himself just as if he were a piece of paper when he is hungry, getting his food, and then wrapping himself about it. The starfish, on the contrary, turns himself inside out and wraps his food around him, and stays that way until he has had enough. The prongs of the starfish look like teeth, but in reality they are not, being nothing but ornaments to his person.—Ex.

A full cider barrel should be on every farm, provided the cider is of the right age and called vinegar.

Apples are nature's best tonic and regulator. They are the physician's worst enemy.

Soil which is very dry does not absorb water so readily as does moist soil.

"The Makings" of the Panama Canal

"Bull" Durham in fresh, fragrant, hand-made cigarettes has proved a constant source of comfort and inspiration to the army of tireless workers in the Canal zone. Keen-eyed surveyors, resourceful engineers, sturdy section-bosses, bronzed army officers, all *"roll their own"* in the stress of work under a tropic sun, or in the balmy, restful evenings under the stars in Panama City and Colon.

Whenever men go forth to do men's work in the rough corners of the world, most of the luxuries of civilization they leave behind them; but *one* luxury, the *most satisfying* of all, they *carry with them*—

GENUINE
"BULL" DURHAM
SMOKING TOBACCO
(Enough for forty hand-made cigarettes in each 5c sack)

From Panama to Klondike, from Broadway to Manila, pure, ripe, mellow, "Bull" Durham tobacco is smoked by *more millions* of men than all other high-grade tobaccos *combined.* The fragrant *aroma* and satisfying *flavor* of "Bull" Durham hand-made cigarettes are a secret of the manufacturers. You can get this unique feature in no other tobacco.

An Illustrated Booklet, showing how to "Roll Your Own," and a Book of cigarette papers, will both be mailed, *free,* to any address in U.S. on postal request. Address "Bull" Durham, Durham, N. C., Room 1100. **FREE**

THE AMERICAN TOBACCO COMPANY

Useful and Up-to-Date Patterns

No. 4223—Ladies' Kimono. Sizes 32, 36, 40 and 44 bust. Size 36 requires 5½ yards 36-inch material. Price, 15 cents.

No. 4726—Men's Overalls. Sizes 32, 34, 36, 38, 40, 42, 44, 46 and 48 chest measure. Size 36 chest requires 3⅛ yards 36-inch material. Price, 15 cents.

No. 5723—Girls' Dress. Without lining. Having high neck perforated in front for square neck, long one-piece sleeves perforated for short sleeves, attached five-gored skirt. Closing to left of center-front under plait. Sizes 4, 6, 8, 10, 12 and 14 years. Size 8 requires 3⅞ yards 30-inch material. Price 15 cents. Braiding design No. 11151; transfer pattern, 15 cents.

No. 5735—Ladies' Waist with Japanese Collar. Long one-piece raglan sleeves perforated for short sleeves; adjustable shield having high, round or square neck. May be made with or without trimming piece. No lining. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 2 yards 44-inch material, with ¾ yard 18-inch lace for shield and standing collar. Price, 15 cents. Scallop No. 11747; transfer pattern, containing 4 different sized scallops and 1 yard of each size, 15 cents.

No. 4441—Ladies' Corset Cover. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 1⅜ yards 36-inch material. Price, 10 cents. Embroidery design No. 11730. Transfer pattern, 15 cents.

No. 5733—Boys' Dombey Suit. Consisting of a blouse to be slipped on over the head and having long or short sleeves; also side-closing trousers. Lower side edges of blouse and trousers in either of two outlines. Sizes 3, 4, 5, 6, 8 and 10 years. Size 6 requires 3¾ yards 27-inch material, with ⅜ yard 18-inch contrasting material for collar. Price, 10 cents.

No. 5742—Infants' Set. Consisting of a yoke dress closing in back and having long one-piece sleeves perforated for short sleeves. Long kimono with long one-piece raglan sleeves, perforated for short sacque and short sleeves. Yoke cape with hood and with or without ruffle. One size. Requires 2 yards 36-inch material for dress; 1¾ yards 36-inch for long kimono; ¾ yard 36-inch for sacque; 2½ yards 33-inch for cape. Price, 15 cents.

No. 5744—Ladies' Russian Tunic Skirt. Two-piece, with high waistline and in regulation or shorter length. Having inserted plaited section at lower edge between gores and may be made straight or rounded in front at lower edge. Two-piece gathered tunic. Closing to left of center-front under tunic. Width around lower edge about 1⅜ yards. Sizes 21, 22, 24, 26, 28, 30 and 32 waist. Size 26 requires 5¼ yards 36-inch material; or, if upper part of back gore be made of lining, size 26 will require 4¾ yards 36-inch material, with ⅞ yard 27-inch lining. Price, 15 cents.

No. 5005—Ladies' Night Gown. To be slipped on over the head. Having long one-piece sleeves perforated for short sleeves. The pattern is cut in 5 sizes—for 32, 36, 40, 44 and 48 inches bust measure. Size 36 requires 4¼ yards 36-inch material, or the same quantity of 45-inch material. Price, 15 cents. Embroidery design No. 11808. Transfer pattern, 15 cents. Scallop No. 11659—¼ inch deep and ½ inch wide. Transfer pattern, 15 cents.

No. 5116—Child's Bathing Suit. Having long one-piece sleeves perforated for cap-sleeves and high or square neck. Sizes 2, 3, 4, 6 and 8 years. Size 4 requires 2⅞ yards 30-inch material. Price, 10 cents.

No. 4820—Men's House Coat. With front and collar in one piece and two-seam sleeves. Lower part of front in square or rounded outlines. Sizes 32, 34, 36, 38, 40, 42 and 44 inches chest measure. Size 36 requires 3 yards 36-inch material with 1⅜ yards 27-inch contrasting material for facing. Price 15 cents.

Address all pattern orders to Household Department, "Orchard and Farm," Hearst Bldg., San Francisco, Cal.

FLOOR POLISH

Hard wood is the best to polish, but good results may be obtained from any ordinary floor. Tighten all loose boards. Clean and dry thoroughly and fill the cracks with putty.

To linseed oil add a little amber and sienna and apply with a clean paint brush. Let dry over night.

To a pound of beeswax add a pint of turpentine. Mix away from any fire or heat. Apply to the floor with a woolen cloth. Rub into the wood with a stiff brush. For the last rubbing use a soft brush. Dry a day and add another coat. Let dry an additional day before using.

Age and good care increase the beauty of this floor.—MRS. J. L. BEVERS, Oleta, Cal.

MENDING CARPETS AND RUGS

Trim the edges neatly, matching the figures. If the material is worn thin apply a patch to the under side, to which has been applied a thin, smooth flour paste; press down the patch and apply a hot iron. This cooks the paste and the repairing cannot be detached or removed.—MRS. J. L. BEVERS, Oleta, Cal.

Some men are born fools, while others wear fancy checked trousers.

WASTED EFFORT.

A charming society girl had spent the entire summer in trying to elevate the simple country people with whom she was boarding. When she was about to leave she said:

"Goodby, Mr. Ingersoll. I hope my visit here hasn't been entirely without good results."

"Sartin not," replied the old farmer. "You've learnt a heap since you first come; but, by heck, you was about the greenest one we ever had on our hands."—National Monthly.

TO REMOVE DOWN FROM DUCK

After taking off feathers and all the down you can, pour melted paraffine over the duck, allow to harden; then remove the parafine and your duck will be nice and clean.

When buying corsets get an extra pair of laces. The extra pair can be used in sash curtains and boy's blouse waists. As they come with tinned ends no bobbinet or pins are needed to run them through.—MRS. J. J. HALL JR., Napa.

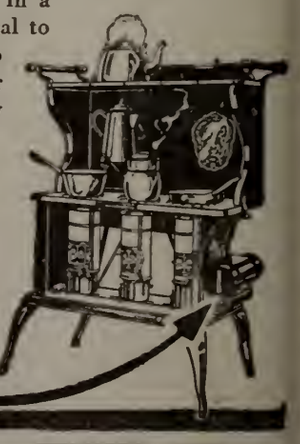
The world seldom thinks well of a man who does not think well of himself.

Kerosene the clean, cheap, fuel

Do you realize the convenience and economy of the modern oil stove? The fuel—kerosene—is the cheapest you can get—clean, safe, easy to handle. The stove has been perfected until it is as good as a wood or coal range for any kind of cooking. The

New Perfection
OIL COOK STOVE

will cook a quick, light breakfast for you, or it will cook a big dinner with roast and bread and pastry. The New Perfection doesn't overheat the kitchen. It doesn't smoke or taint the food. Think of the comfort of summer cooking in a cool kitchen. No wood or coal to lug; no ashes to dirty up the house. Why not ask your dealer to show you the New Perfection.



Standard Oil Company
(California)

FOR BEST RESULTS USE PEARL OIL

HEALD'S

Schools Located in
San Francisco, Oakland, Fresno, San Jose, Sacramento, Stockton, Chico, Reno, Nev.; Santa Cruz, Los Angeles, Riverside, Long Beach.
Write for Prospectus to the school you wish to attend.
Main Office, Post st. and Van Ness ave., San Francisco.

The Bird That Told Its Name

By Martha Burr Banks.

'Oh, dear!" Phoebe sighed, as she lked slowly home from school one y. "All the other children in our ade have the names of more rare ds than I have. I wish I could d a strange bird to-day! Wouldn't be fun to tell Miss Abbott about it morrow?"

Just then Phoebe turned into a odland path that would take her a short cut to her home, and—as might happen in a fairy story—in old apple tree, she saw a bird that e did not know at all.

"Why, it really is an unusual bird, n sure," thought Phoebe, delightly. "Let me see! It has a brown ck, and it wears a brown hood, and s a kind of white apron trimmed ng the sides with browny red. ell, Mr. Bird, who are you?" she ked.

"To-whee!" chirped the bird.

"To-whit, to-whit, to-whee!" said oebe, laughing. "But I'd like to ow who you are."

"To-whee!" answered the bird in plaintive voice.

"You said that before," and Phoebe ghed again. "That must be the ly song you know. But I mean, at kind of a bird are you?"

"To-whee! To-whee!" called the rd, wistfully.

That evening, at the supper table, oebe described the bird that she d seen, and asked if any one could l her its name.

"I should say that it was a robin," r father said.

"Oh, no, father," Phoebe said. "I ow robins by heart."

"Perhaps it was a bluebird," guessed oebe's mother. "Bluebirds have red easts."

"But bluebirds are blue," Phoebe clared.

"That's strange," put in Phoebe's g brother. "But it sounds to me mething like a swallow."

"It didn't have a swallow tail," Phoebe sighed, patiently.

"Of course not, with a red waistcoat," murmured the big brother.

"It was probably some kind of a sparrow," Phoebe's big sister said. She thought every bird was a sparrow.

"It was too big for a sparrow," returned Phoebe, "and sparrows sing up-an-down songs, and don't say two words over and over."

The next morning Phoebe went early to school to see whether Miss Abbott knew anything about her strange bird. "It was a ground-robin or a chewink, I think," said Miss Abbott.

"Oh, no, Miss Abbott!" cried Phoebe, almost in despair of finding anybody who could understand just how her bird looked. "There is a chewink on our bird chart, you know, and he is black and white, and much redder on the sides."

"But your friend was Mrs. Chewink, and she told you her name herself."

"But she didn't say 'chewink,'" said Phoebe, "but 'to-whee'!"

"That is another of her names," replied Miss Abbott. "She was Mrs. Ground-Robin, Mrs. Chewink, or Mrs. Towhee."

"Oh," exclaimed Phoebe, with a long sigh of relief. "Well, I've found out who she is at last. Wasn't it funny that I was going round asking everybody what her name was, when she was telling me all the time? May I put Mother Towhee on my list?"

"Surely, Phoebe," answered Miss Abbott, "and the other children will be glad to hear about her. Find her picture in one of our bird books, and have it ready to show them."

At the supper table that night Phoebe exclaimed, suddenly: "I've found the name of my bird! She was Mrs. Ground-Robin, Chewink, Towhee, and she told me her name when I asked it!"—National Humane Journal.

HOME-MADE DISHWASHER.

Not being able to find a satisfactory shwasher at small price, we experiented and finally found at a department store a large size wire basket r frying croquettes which cost 40 nts and a long-handled bristle brush r 15 cents. Having the dishes carelly scraped and rinsed, the two dishns two-thirds full of very hot water d a liberal supply of soap in the ashing water, the method is as folws:

Place the wire basket in the washg pan and wash each plate, say, with e brush as it goes into the water d basket; continue till all the dishes a size are washed and in the basket; t the basket containing the dishes t of the water by the handle, tip a tle to drain; put all in the rinsing ater for a moment; lift by the hanle, tip to drain a second; then place e dishes on the dish drainer.

If plenty of soap has been used in e wash water and the water in both ns is steaming hot, the dishes will rain perfectly dry and require no iping whatever, except perhaps a ch of the towel if there happens bc a drop of water on the edge of dish. The dishes must be washed lean, for a greasy dish will not drain ell. It is best to wipe the silver and lasses with a towel. China having ecorations in gilt will not bear very ot water or much soap and should ot be washed as described.

O CLEAN GILT PICTURE FRAMES

To one pint of water add enough ulphur flour to give it a color and dd to this a few onions, boil and train, then wash the frames with a soft cloth; when dry it will be like ew.—MRS. G. N. CROSWELL, Cucamonga.

TICKLING SHARKS

Tickling trout is a pleasant pastime in British streams, but tickling sharks as practiced by the natives in the West Indies is decidedly a nervous sort of a sport.

Nevertheless, the native likes nothing better than to demonstrate his prowess to the European. A correspondent gives us a splendid word-picture of this so-called sport.

On the blue surface, he says, a native canoe skims along, "leg o' mutton" sail drawing to the light breeze.

The native in the bow inspires confidence, for he is the most unconcerned person imaginable. He's out for business and the attendant dollars, and the only object that he has eyes for is the shark's tail, sticking out of the reef. Presently he sights one, signals to the steerman, and the canoe is "luffed." The "outrigger" takes the water, the great sail is lashed to the mast, and the catamaran lies like a pair of logs on the calm blue surface.

Peering into the clear water where one sees with ease to a depth of four or five fathoms, far down amid the sea ferns and coral cups, is the long, lithe tail of a shark, and a huge pectoral fin, that sways continually, with a sideways motion, and sends up tiny circling ripples to the surface.

The native diver picks up a coil of cocoanut fiber rope, with a noose of the "slipknot" already tied, places a knife in his teeth, and quickly slips into the water.

There is no diving, no splash, for the least disturbance would alarm the shark and the tickling performance be postponed indefinitely. It is a wonderful feat in the art of aquatics this that we are watching. The native keeps close to the reef and pulls himself gently down through the water by means of sea growth, until he is right over the waving tail.

Up in the canoe the white man holds his breath. What if the shark wakes! Ugh! Slowly a black hand and arm are stretched out and, starting from behind the great pectoral fin, commences to stroke the sea-tiger. There is just the faintest movement of the body and the tail sways a little more rapidly. Again he is stroked, and during the operation the slipknot of the rope is left hanging loosely near the spread of the tail.

Then quietly the native comes to the surface, and one breathes freely again. The great sail is set. The steerman takes his place on the "outrigger," and the diver in the bow, with a yell off "lula," pulls hard on the rope.

The shark has been tickled and caught; it is now only a matter of towing him to the beach and telling the tale to your pals in the "club" at home.

TO REMOVE FLYPAPER

If any one should get into sticky flypaper with hands or clothing, or should children get it into their hair, just clean it out with lard and then remove the lard with soap and water. You will be surprised how easily it can be removed in this way.—M. E. STOKES, Santa Cruz.

Mix ½ cup sugar and ¼ cup butter. Add 1 beaten egg. Mix and sift 1½ cups flour and 2 teaspoons baking powder. Add alternately with ½ cup milk to first mixture. Bake 30 minutes.

A Cake for 12c Baked in a

"Wear-Ever" ALUMINUM CAKE PAN

"Wear-Ever" Aluminum Cake Pans bake good cakes because they bake quickly and evenly on all sides at once.

"Wear-Ever" Utensils are solid metal---cannot chip---cannot rust---pure and safe.

Replace utensils that wear out with utensils that "Wear-Ever"

Send for our new folder, "Delicious Cake Recipes" mailed free upon request.

WANTED: Men to demonstrate and sell "Wear-Ever" specialties. Only those who can furnish security will be considered.

The Aluminum Cooking Utensil Co.
Dept. 63, New Kensington, Pa., or
Northern Aluminum Co., Ltd., Toronto, Ont.

Send prepaid 1-qt. "Wear-Ever" Stewpan. Enclosed is 20c in stamps---money refunded if not satisfied

Name.....

Address.....

FOURTH printing of the joyous story

SUNSHINE JANE

By ANNE WARNER
Author of "The Rejuvenation of Aunt Mary," etc.

"It makes no difference whether you're a Grouch or a Sunshiner, you will want to become acquainted with 'Sunshine Jane'"—*Boston Globe.*

Jane Is a Joyous Ray of Sunshine

Frontispiece. 287 pp. $1.00 net; by mail $1.09

Boston: LITTLE, BROWN & CO., Publishers

WANTED

Names and addresses of farmers who can or want to ship, eggs, butter, poultry, fruit, etc., by Parcel Post, direct from farm to consumers living in San Francisco and Bay Cities. Write, stating what you have to sell and giving full address,

Box 654

Care Orchard and Farm, San Francisco.

What Silk Worms Will Do

By Mrs. J. D. Murphy

(Great interest has developed in what was said of silk culture for California in our April and May issues and we feel that the following parts of an address by Mrs. J. D. Murphy of San Francisco, president of the Ladies' Silk Culture Society of California, before the Fruit Growers' Convention at the State University Farm School, will be highly appreciated, giving as it does definite facts on methods of production and financial returns. This society has given great study to silk culture for California and succeeded in establishing the industry at Rutherford, Napa county. Unfortunately space permits only a partial use of Mrs. Murphy's address.—Editor.)

A Home Industry.

In all countries where the silk industry flourishes the work is mostly done by women and children, it being essentially a home industry. The worm is the product of a tiny egg, laid by an insect known as the silk moth; one ounce of these eggs will produce from 35,000 to 40,000 worms. One ounce of eggs will produce 16 to 22 pounds of silk according to the care in feeding the silk worms, the better the food in quality and quantity the better the silk will be. The latest quotation from the Italian silk market is from $4.70 to $5.20 a pound.

We will now estimate what the cost would be in raising 32 pounds of silk at the lowest figure.

Two ounces of eggs, the finest procurable, the labor and the leaves provided by home industry	$ 5.00
The reeling, $1.25 a lb.	40.00
	$ 45.00
Silk, 32 lbs. at $4.70 a lb.	$150.40
Eggs and reeling	45.00
Profit	$115.40
Say incidentals $15; profit	$100.00
At the highest price, profit	$150.00

One woman and a boy could raise this silk in about six weeks. If there are plenty of leaves to feed the worms the work could be continued to September, or as long as the leaves flourish.

Methods Required.

They are easily raised; the failures in silk culture almost always result from improperly caring for these worms. Sanitary surroundings, plenty of fresh air, an even temperature of about 70 degrees, and perfect cleanliness are absolutely essential; and above all an abundant supply of mulberry leaves, their natural food. The worms can be fed on other foods, such as lettuce, fig and graps leaves, elm, oak, viper grass, and other kinds of vegetables, but the results will be most unsatisfactory. For hundreds of years, experiments have been made in feeding worms on these various foods by breeders in every country where silk culture has been carried on, but it is now conceded by all authorities that to secure the best and strongest fiber, the mulberry leaf yields the only reliable elements as a food for the production of silk. It is said that no other insect will eat the mulberry leaf; it would seem as if the tree and the insect were created for each other.

It would, therefore, be a waste of time to undertake the raising of silk worms until there is an abundance of the mulberry leaves ready to feed them. Every authority I have read is emphatic on this point. During 1908 the French Government made exhaustive experiments in raising worms on the osage leaf so much lauded as a food, the result being that the crops fell off 25 per cent.

Life of the Insect.

When the worm emerges from its shell it measures about the eighth of an inch, and immediately wanders around in search of food. The leaves are cut as fine as possible for its first meals; in about four days it lapses into a sleep, which lasts 24 hours. During this time it sheds its skin and wakes up ready for business with a new coat on. This process is repeated four times more, between each sleep it eats voraciously and grows rapidly. After it has matured, which takes from 22 to 30 days, it is then ready to spin its cocoon.

In my reading on this subject I have been impressed with the statement found in the older histories that the matured worms mesaure from 8½ inches to 3 inches; modern writers invariably give from 3½ to 4 inches, demonstrating what eugenics can do for even a worm. By persisting in following this practice of selection and training the worms into a preference for alfalfa as a food which I have read is being advocated, who knows what the future of the silk industry might become in our glorious climate which is so favorable in every other particular to silk culture.

When ready to spin its cocoon it suspends itself to some adjacent support by throwing out its silken threads thereon; getting busy it finishes the cocoon in two or three days; during this time it has again been metamorphosed and will emerge as a beautiful silver gray moth, but in doing this cuts through the silk which is left in the cocoon in such short lengths as to be useless.

Up to this point the little creature has followed the law of its nature, but if we are to profit by its work we must prevent it from coming out of the cocoon. This is done by stifling the worm over steam or baking it in a moderate oven, a very delicate process, or the silk would be ruined. The largest cocoons are selected for mating. The sexes are readily distinguished, Nature in this creation reversing her general order, the male being the smaller and formed with a sloping center, resembling a waist line. Two or three days after mating both male and female die, the female, having laid from 300 to 500 eggs, dying first. The whole cycle of its life is from 25 to 36 days.

Work in California.

Cocoons are now being raised at St. Joseph's Agricultural Institute, Napa county. For this purpose all the land needed for the mulberry trees and a large building specially adapted for the work is at our service. This non-sectarian institution is an annex of the Youths' Directory of San Francisco, where homeless boys are sheltered and educated by voluntary contributions. The older boys, from 14 to 21, are sent to this Agricultural Institute and are trained in the scientific farming; sericulture being now added under the control and management of the L. S. C. Society, the Rev. Father D. O. Crowley co-operating, without any charge to the society whatever.

Securing from France and Italy the best eggs developed, perfect cocoons have been spun, our superintendent, a Swiss-Italian, a master of the art, states that he has never seen finer specimens. The work has been done by this one man and the help of two boys to gather the leaves. The hatching of the eggs was started the first week in April.

A visit to this establishment is the most convincing demonstration of what silk culture may become in California. Visitors are welcomed at any time, and I hope that all of you who are interested and desirous of seeing this great industry succeed will avail yourselves of this opportunity to see the worms at work in every stage of its existence; it will repay you, for it is really a wonderful exhibit.

In this age of commercialism, the problem is asked of every industrial enterprise, does it pay? These questions cannot be answered at present, but judging from our success so far in raising the worms with so little trouble, it must pay, and pay well when our people know how.

The basis of silk culture is the mulberry tree. The very first step, therefore, is to plant these trees everywhere throughout the State that is best adapted to the raising of the worms, not only around the home but in every vacant corner of the farm, along the highways as hedges and shade trees; on river banks and the foothills that are now uncultivated.

LET THE CLOCK HELP YOU

I think the work is easily done by timing yourself in whatever you do and see how neat, clean and quick you can do your work by looking at the clock.

Give yourself a certain length of time, say a half hour, to do dishes and such a length of time for each room as they come in order; see how quick it takes all other duties off your mind, and it will surprise you to see how quick your hands, feet and mind is working. It saves many thousand steps, for your mind is on just what you are doing.

I find it gives you hours of rest, where before I took my time in doing things and found that I was working all the time.

Start the girls out the same way and see how quick it teaches them to be quick, and you will laugh to see how they hurry to beat the time through.—MRS. J. P. ANDERSON, Gridley.

EASY HAIR WASH

Ladies, if you wish to wash the hair quickly and without danger of catching a cold and at the same time make it fluffy and light, dip your fingers in gasoline and rub it thoroughly through the hair. It will evaporate about as quick as you put it on and carry away all the dust dirt and oil, leaving the hair clean and fluffy. This wash should be given in the open air and not near a fire for there is danger of an explosion. It is not advisable to give this wash any oftener than six weeks, as it is not necessary. A little toilet water can be put on the hair afterward to counteract any odor of gasoline that might remain. This is convenient for men and women who haven't access to soap and water, and only costs 5 cents for gasoline. This is a tested receipt.—MRS. CHARLES L. JONES, Soledad.

FOR POWER-

RED CROWN

THE GASOLINE OF QUALITY

There is gasoline and gasoline. As a discriminating purchaser you are not concerned with what your gasoline costs *per gallon*—but you are very much concerned with what it costs *per mile*. It is this consideration that will lead you, like thousands of other motorists, to use Red Crown. It is quick acting—uniform—reliable. There is power in every drop.

Red Crown signs are furnished to all dealers handling Red Crown Gasoline. Watch for the Sign or ask our nearest agency about delivery in bulk.

Standard Oil Company
(California)

EXPERT SERVICE

Is given to subscribers of

ORCHARD AND FARM

In the Department of

Answers to Farm Problems

Turn to pages 14 and 15 of this issue and see for yourself the splendid practical value of this feature of Orchard and Farm. Subscribers will often find a single answer that will be worth many times the subscription price.

Each question, whether it be on livestock, fruit growing, soil handling, mechanical questions or household problems is given careful expert attention and the meat of the question is boiled down and printed for all our readers. No more valuable source of information exists for California farmers than this Expert Service Department of Orchard and Farm.

Use this service in your daily work and if you have questions to ask put them up to us.

ORCHARD and FARM
ESTABLISHED 1888
IRRIGATION

Hearst Building, San Francisco

MADE FOR PEOPLE WHO GROW THINGS.

Los Angeles Branch, 422 N. Soto Street.

CARBO
TRADE MARK REGISTERED

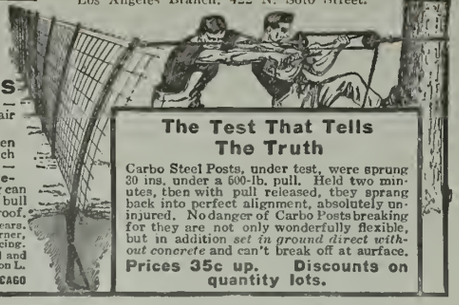
Flexible Fence Posts
prove their "steel" under all conditions — make farms better looking—save fence repair expense—**reduce stock insurance.**

Every dollar spent replacing rotten wooden posts with Carbo Steel Posts—just that much money saved. Carbo Posts are permanent — won't burn, break or bend. **Never need repairs.** Once set—they last forever Nothing can damage them. Resist stampedes of wildest bull or sow. Guaranteed fire, frost, lightning proof.

Burning fence lines will be compulsory in a few years. Do it now with Carbo posts. Our stiff end, stiff corner, flexible line posts make ideal posts for all fencing.

Write for Post Facts and quantity prices on yard and field posts. State your needs and ask for Proposition L.

CARBO STEEL POST CO., 2004 Rand-McNally Bldg., CHICAGO



The Test That Tells The Truth

Carbo Steel Posts, under test, were sprung 30 ins. under a 600-lb. pull. Held two minutes, then with pull released, they sprang back into perfect alignment, absolutely uninjured. No danger of Carbo Posts breaking for they are not only wonderfully flexible, but in addition *set in ground direct without concrete* and can't break off at surface.

Prices 35c up. Discounts on quantity lots.

RAVENSWOOD HERD SHORTHORN CATTLE

ESTABLISHED 1839
Herd Numbers 140 Well-Bred Scotch Animals Headed by Marengo's Choice 353873, Assisted by Wood Dale Stamp, a Son of Imp. Clara 53.
CHAS. E. LEONARD & SON, Proprietors.
ED PATTERSON, Manager.
Hunceton, Missouri.

ATTENTION!
HOMESEEKERS AND INVESTORS

INVESTIGATE
The Opportunities for the Homeseeker and Business Man in the New Territory Along the

WESTERN PACIFIC RAILWAY
—IN—
CALIFORNIA, NEVADA, UTAH

1,500,000
ACRES OF GOOD
IMPROVED AND UNIMPROVED LANDS
AWAITING SETTLEMENT

WRITE FOR A FREE COPY OF OUR
"HOMESEEKERS" and "OPPORTUNITIES"
LISTING AND EXPLICITLY
DESCRIBING OPPORTUNITIES IN
THIS NEW COUNTRY.

WESTERN PACIFIC RY.

BODE K. SMITH
ASS'T. GENERAL PASSENGER AGENT.
MILLS BUILDING SAN FRANCISCO

"Best Advertising Paper in California"

ORCHARD AND FARM,
San Francisco, Cal.
Dear Sir:
Inclosed find remittance for my classified ad. Keep it running, as I would not miss an issue.
Having great success, best advertising paper in California.
Yours for success,
J. SINNOTT.
Fresno County.

Orchard and Farm Classified Ads Pay in Results

BRENTWOOD IRRIGATED FARMS

"Best in the West"

Hog Raising Should Bring Handsome Profits on Brentwood Irrigated Farms

Over half the pork products consumed in California are shipped in from the East. The demand is growing faster than the supply.

Brentwood Irrigated Farms are located east of Mt. Diablo in Eastern Contra Costa County, 60 miles from the million people who live around San Francisco Bay.

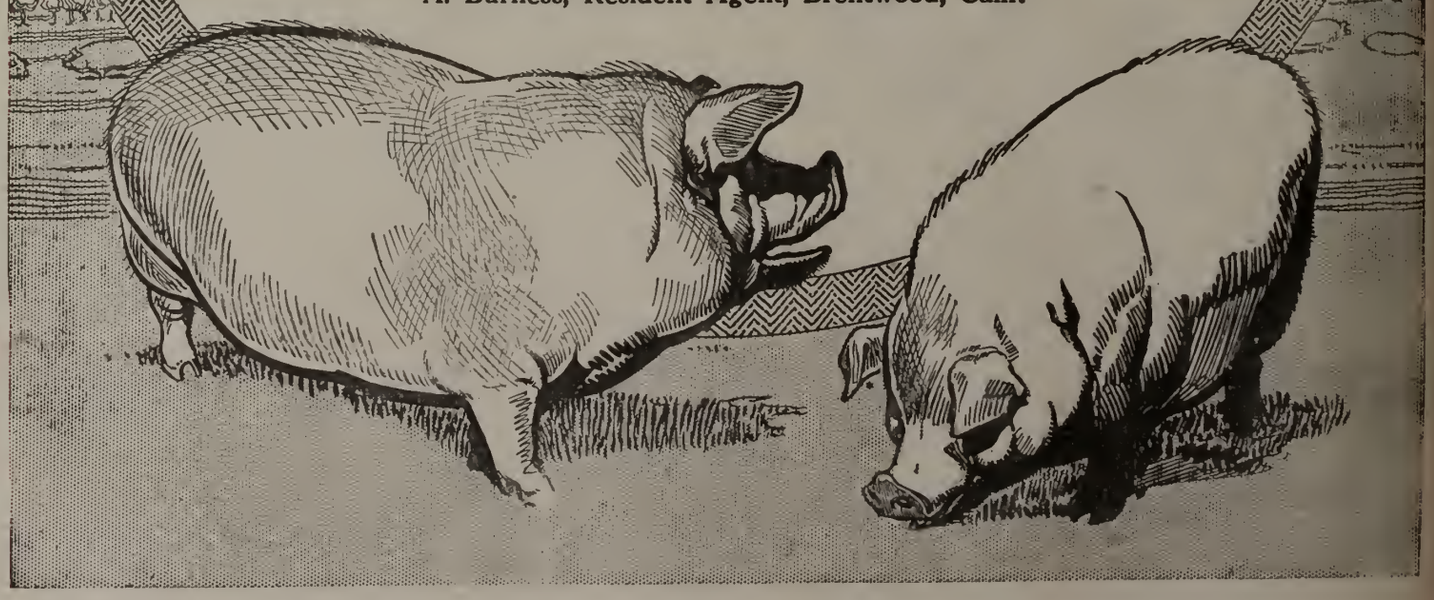
Complete irrigation system, of the highest type of construction.

With the fertile soil, ample water, excellent climate and ready market, Brentwood Irrigated Farms give large returns on alfalfa, fruits, nuts, vegetables and dairy, pork and poultry products.

Price $300 an acre including water right. Write for illustrated pamphlet.

Balfour, Guthrie & Co., 350 California Street, San Francisco

A. Burness, Resident Agent, Brentwood, Calif.



ORCHARD and FARM

HORTICULTURE
AGRICULTURE
VITICULTURE

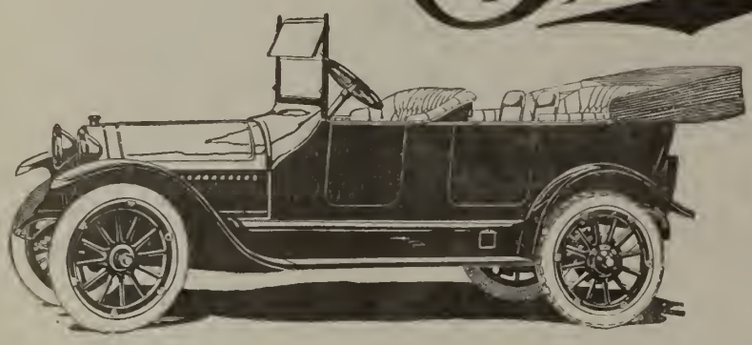
ESTABLISHED 1888
IRRIGATION

STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 8 Published by Country Life Publishing Co. August, 1914 Hearst Building, San Francisco, Cal. 50 Cents a Year

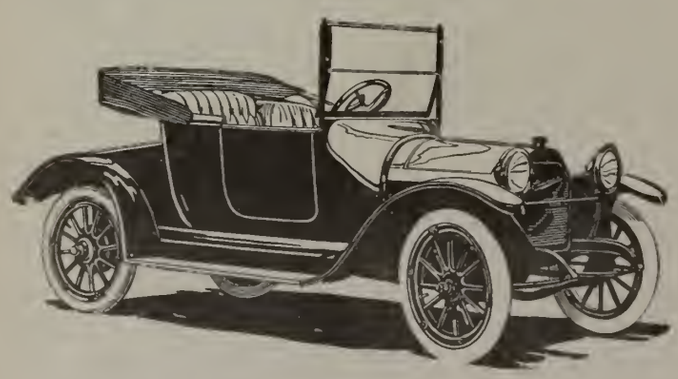
Alfalfa and Good Cows Are the Two Leading Features of Intensive California Dairying.

The New Studebaker Automobiles



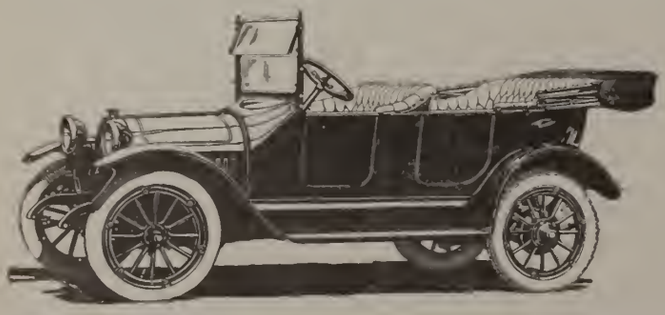
The New SIX—5-Passenger (7-Passenger $1,450) $1,385

Two body styles: Five-Passenger and Seven-Passenger Touring.
Wheelbase—121 inches.
Long-Stroke (5-inch), Small-Bore (3½-inch) Motor; Six Cylinders, en Bloc.
Smokeless, Non-Leaking Lubrication System.
Larger Valve Openings.
New, Exhaust-Silencing Muffler.
Annular Piston Rings.
Cellular Radiator.
Lighter Reciprocating Parts.
Crowned Fenders.
Lightened Clutch Operation.
150 Pounds Lighter.
15x2½-in. Brakes.
34x4-in. Goodrich Tires on Q. D. Demountable Rims; Safety Tread on Rear.
Roomier Front and Rear Compartments.
Continuous Aluminum Footboard.
One-Man Type Top.
Built-in Rain and Clear Vision Ventilating Windshield, Attaching Rigidly to Top.
Scientific Anti-Rumble Gasoline Tank in Cowl.
Magnetic, Non-Leaking Gasoline Gauge, the only One Approved by Insurance Underwriters.
Full-Floating Rear Axle, Shaft Locking Into Taper at Hub.
Full Equipment of 13 Timken Roller Bearings.
Irreversible Steering.
Inter-Locking Ignition and Lighting Switches.
24 Finishing Operations in Painting Bodies Studebaker Blue.



The New FOUR Roadster $985

A three-seated roadster that actually seats three grown persons in perfect comfort. Driver's seat set slightly forward. A special top, baggage compartment at rear, etc. Same general specifications as FOUR Touring Car.



The New FOUR Touring Car $985

Two Body Styles; Five-Passenger Touring; Three-Passenger Roadster.
Wheelbase—108 inches.
Long-Stroke (5-inch), Small-Bore (3½-inch) Motor; Four Cylinders, en Bloc, Exhaust, Manifold Cast Separate.
Smokeless, Non-Leaking Lubrication System.
Larger Valve Openings.
Pressed Steel Push-Rods.
Annular Piston Rings.
Tubular Radiator with Auxiliary Water Tank.
Crowned Fenders.
Special Dimming Headlights.
100 Pounds Lighter.
12x2½-inch Brakes.
Hot-Jacketed Schebler Carburetor Bolted to Cylinders.
Magnetic, Non-Leaking Gasoline Gauge, the Only One Approved by Insurance Underwriters.
Generous Footroom in Both Compartments.
34x4-inch Goodrich Tires on Q. D. Demountable Rims, Safety Tread on Rear.
One-Man Type Top.
Built in Rain and Clear Vision Ventilating Windshield, Attaching Rigidly to Top.
Full Floating Rear Axle, Shaft Locking into Taper at Hub.
Full Equipment of 13 Timken Roller Bearings.
Irreversible Steering.
Flush Dash Equipment.
Extra Rim and Carrier.
24 Finishing Operations in Painting Bodies Studebaker Blue.

Manufactured Cars on Which You Pay Only One Profit

Your Studebaker dealer in your nearest town now has on hand samples of the new Studebaker cars—FOUR and SIX.

Go to him. See the cars.

Inspect them point by point, and your knowledge of automobile construction will impress upon you the splendid safety, strength, stability and comfort of these cars, their fine finish, their generous room, and their complete and liberal equipment.

Through scientific, up-to-date designing and motor refinements, these cars have power in excess of all requirements.

Remember, while you are making your inspection or taking your demonstration ride, that these cars are manufactured entirely—except tires, electrical equipment and a few minor items—by Studebaker, in Studebaker plants, and that no plant in the world is better equipped.

Remember also that their prices represent only one profit—the profit of the legitimate manufacturer who has eliminated the parts middleman from his business.

A moto car, to the farmer, is an economic necessity; not a luxury, as to the city man.

It saves his money; it saves his time; it helps him to get higher efficiency out of himself, his men and his land.

And it wipes out of his family forever the isolation and loneliness that are the dread of many farmers' wives, and that drive the boys and girls into the cities and towns early in life.

Just as the motor car is a good investment, so the Studebaker stands first in value among motor cars and we will tell you why.

For 65 years Studebaker has studied the farmers' needs, as a specialist in farm transportation, and the best way to supply them.

How well we have succeeded you can judge when you know that more than 40 per cent of Studebaker cars are sold annually to farmers.

On Studebaker cars you pay only one profit, as we have said, and the money we save by our complete and thorough manufacturing and huge production goes into the cars themselves to make them better—

To make them last longer; to make them lighter yet stronger; to make them run farther on a gallon of gasoline and oil and on a set of tires.

One thing that adds excess value and life to a Studebaker car is the special steels we use, made to our own specifications especially for Studebaker cars.

Another is the scientific heat treatment of vital parts, like gears, axles, axle shafts, etc., which makes them stronger, longer-wearing, and permits lighter weight with increased strength.

A third is the absolute accuracy of our manufacturing processes, and the resulting perfect fit and alignment of parts, and perfect balance of the motor and the entire car, reducing friction and wear to the very lowest point.

Studebaker economy, in both FOUR and SIX, is known the land over.

Studebaker owners have found our cars peculiarly free from the necessity of repairs and frequent adjustment; all parts readily accessible and cared for with the least time and effort.

Ride in a Studebaker car—FOUR or SIX.

Note how it holds the road without weave or side-sway and know that this roadability is the direct result of Studebaker engineering and Studebaker complete manufacturing.

Equal economy, equal quality and equal roadability are not thus combined in any other "Four" or "Six."

Send for the Studebaker Proof Book which tells all about Studebaker manufacturing processes and illustrates them.

STUDEBAKER, DETROIT
110 Piquette Ave.

(No. 241)

ORCHARD AND FARM
IRRIGATION

Vol. XXVI AUGUST, 1914 No. 8

Agriculture in the County of Gold

By the Editor

El Dorado county, "the golden," is part of that district where American civilization was first established in California, the rush of goldseekers in the days of '49 soon filling the county and neighboring counties to far more than the present population. With the digging of the gold came agriculture, for men must eat, and up in the mountains, far from the Sacramento valley, which itself was entirely undeveloped at that time, it was necessary to produce food for a large population of miners. Thus almost the first real agriculture of northern California was well established in El Dorado and neighboring counties sixty years ago.

Although the surface mines have long since been practically worked out and the old-time miner is practically gone, the agriculture still endures, but it is a different agriculture from that in the valley below. In the nature of things it always will be. Although things have remained more or less in a rut since the mining population dwindled to its present amount, the time has about come for renewed agricultural development, and, in fact, this has begun.

The farming in the foothills to-day is what we younger generation of Californians look back to as resembling closely the farming of half a century or more ago in the Eastern States, and it always will be much like what it is now. It is the farming which seems to be typical of the story books of long ago.

The foothill farm is in hilly country, with some timber, some brush, some pasture, a family orchard, fields for hay and grain. On every farm—wonder of wonders for California—is the home garden, with potatoes, corn, peas, beans, cabbages, lettuce, tomatoes and whatever else is needed to supply the family table. A few chickens are kept, as on every farm, but here the grain for them is nearly all raised on the place. Of course, there are almost always a couple of hogs to keep the family in meat, also a number of cows whose main duty is to produce calves which can be raised for beef on pasture and what hay is raised for them and the horses. These cows also provide milk and butter for the family, but are not dairy, but beef animals, and when their family days are over they are marketed as beef animals, not as worn-out dairy cows. It is the production of beef, in fact, that provides one of the leading sources of income on many ranches, particularly those that are some distance from the railroads. Almost no real dairying is done on the typical foothill ranch. Almost every cow also has a bell to show her whereabouts. It is one part of the State where the tinkle of the cow bell is one of the usual sounds, where the cow goes to a rough pasture every day and comes back every night, the bell being needed so that the dog or boy can find her.

Although in the valley below the soil in many places has kind of petered out for grain, it seems an interesting fact that grain is frequently the main product of the ranches in certain parts of the county at least, and the yield per acre is pretty satisfactory, too. It is not the same kind of grain farming as in the valley, for there wheat or barley is grown in vast fields of level land, or at the most gently rolling foothills, where the combined harvester can handle the crop.

Here in the foothills the grain has to be raised in cleared fields, of limited size and of varying degree of slope, with forest or brush land at the side, the fields, perhaps, broken by rocky or poor soil or by canyons. Instead of raising only wheat or barley, there will perhaps be produced wheat one place, rye another, barley another and oats on a fourth field.

Garden of Frank Goffinet in Mt. Aukum District on July 2, 1914.

Wheat is the main cereal, with a greater production of rye than can be found anywhere else in California. Very probably it is the fact that farming is so diversified that makes grain farming profitable so long, for the soil usually is not naturally very rich.

In fact, there is not a part of the State in which there is such diversified farming of so true a type, and this will in the nature of things always be the case. The farmer must be more or less of a stockman, wood chopper, fruit grower and able to turn his hand to almost everything. The farmer's boy has the training with a gun that used to be considered the heritage of every country youth, as the brush contains lots of rabbits, tree and ground squirrels, quail, doves and other small game, while there are coyotes to kill occasionally to protect chickens and goats. As there is much more rain than on the floor of the valley, there are quite a few springs and the canyons each have good sized streams bringing water from the snows of the Sierras that contain trout to provide sport with rod and line. It needs little more to show that farming and life otherwise is radically different from that normally found in California, and it is a farming in many respects more pleasant and better rounded out than one-crop farming, whether that be wheat or citrus production.

There is no one typical farm or district through the Sierra foothills, wherever one may go. Things change according to elevation, and at the same elevation these is quite sure to be a great difference in two places two or twenty miles apart. As a rule the higher the elevation the rougher the country, and the heavier the brush and timber also the greater the rainfall and more abundant the springs and streams. Lower down at the edge of the Sacramento valley it may be too dry to do successful farming on a ranch of moderate size without irrigation, and then as one advances the precipitation increases to average about 35 to 45 inches at elevations from 1,500 to 3,000 or 3,500 feet, between which most of the foothill farming herein described is done.

Leaving Sacramento and going eastward on the train, one hardly knows when the valley ends and the hills begin, or later, when the hills really become mountains. The valley floor first becomes somewhat irregular, and it is seen that the streams have high, steep banks; then surface irregularities become real rolling land, the rolling land foothills, and finally the hills merge into the mountains. Looking off eastward and southward it is hard to realize, if there is a slight haze, that one is really looking toward some of the highest mountains in the United States, for the rolling country merges into the mountains so slowly that one appears to be looking over a wide valley, covered with wooded hills. But, knowing that the mountains draw rain and snow, and seeing that the timber is thick and tall in the distance, and then viewing the rocky, snow-streaked Sierras far against the sky, the steady change from gently rolling hills to the grand Sierras is apparent.

Here in the foothills is the great mining district of California, the country of Bret Harte and Mark Twain, but mining of the old days has gone forever. Early in the fifties El Dorado county had six or seven times the population that it has to-day, all sturdy, energetic young men, who overturned hills and uprooted river beds in their search for gold. It was an immense amount of work they did, not only in the actual mining, but in constructing ditches to carry the water necessary in washing the gravel, in clearing the land necessary to raise hay for their horses, mules and burros, in constructing roads for the immense amount of hauling that was necessary in those days. So thoroughly have they upset the surface of the earth that little surface mining is left to do and most gold is taken from a few big mines. It is true that some old-time mining is done in a small way in hills not favorably considered by the old timers, and enough gold is still taken out so that wages at the least can be ordinarily expected, with a possible hope of fairly good fortune, but leaving out a few great mines, mining is only a ghost of that of the early days.

It was a wonderful set of men that came to the Sierra foothills for the gold rush. As had been said, the cowards never started; the fools and the weaklings never arrived. A trip over any part of the mining country will be impressive from the ruins of mighty accomplishment.

A most interesting feature to those who think that the miners were a hard living, whisky-drinking crowd, as accepted romance would have us believe, is the prevalence of former breweries.

Newtown, a dozen miles south from Placerville (the old Hangtown), is composed of the remains of an old store and four to six deserted houses. It is inhabited by a single person, an old Italian miner. Yet Newtown, isolated as it is and reached only by long, up and down roads, proudly boasted of a large brewery more than thirty years ago. A dozen miles south from Newtown and twenty miles from a railroad even in these days, is Fairplay, in the center of a fine farming community, but composed of one family, running postoffice, hotel, store, bar and doing a little farming on the side, and Fairplay likewise boasted a fine brewery.

So it was all over the gold country. The miners in winter probably consumed a good deal of fiery liquor, but in summer their main reliance was beer, and apparently they got rid of a good deal of it. That does not go into fiction, for beer does not seem so romantic as stronger stuff, if romantic is the term to use. However, this is hardly agriculture.

One thing the Argonauts did do was to plant orchards and raise garden truck. Everywhere you go will be found by the side of former dwelling places a small apple orchard, and some not so small, for apples seemed the most natural fruit to plant, the fruit most familiar to the miners. There those apple trees stand to-day, neglected, grown up with brush and grass, but vigorous, sturdy and in fine condition. They were planted where natural water was available and the soil good, for the cabins had to be situated by a spring to provide drinking water. And they are strong to-day because the Sierra foothills from 1,500 to 3,000 feet up is a natural fruit country, in climate at least, and soil and moisture were sure to be good where the trees were planted.

The miner also had his vegetable patch, the predecessor of the family garden to-day, almost invariably containing a fine assortment of vege-

tables and given the best of care. There are lumber camps in the mountains and some large mines in places which still make truck farming pay. An over-production of vegetables could occur, but potatoes, for example, have never been too abundant yet and more could always be sold at big prices. There is a market also for the apples yet, though they may have to be hauled 20 to 25 miles. They are put on top of six inches or so of straw and covered with the same amount, which is pressed down tight with planks to prevent the fruit from moving around and so are hauled in perfect condition over steep and occasionally rough roads.

The common talk is that the farmers are a backward sort there, but there is something to say on the other side. Hardly a place in California or the whole United States where fruit is grown in less than commercial amounts will be found systematic spraying, thinning and other fruit work. There is hardly an old apple orchard of any size at all, say one acre or more, 25 miles from the railroad, in the Fairplay, Mt. Aukum section at least, but is carefully sprayed and practically free from worms.

One farmer had some special rye of former local fame he was growing in his garden for seed, another had selected some choice heads of unusual type of wheat to raise seed and his main wheat crop was from seed developed by another farmer in the same way; a third was trying some rye provided at his request by the United States Department of Agricuture; a number of others were trying out other plants. Usually bulls and bucks are of common stock, but in the Angora industry of the district big money had been spent for registered bucks and the kids to be seen indicated it. All of these things will be found hard to equal elsewhere and are signs of live farming methods.

Knowing the expense of hauling long distances, especially when those distances are all up and down steep grades, it is a wonder how a person can farm under such conditions. However it is, the farmers are prosperous and have all the money needed for nice homes and necessary luxuries.

Owing to the distance from rail transportation, easily transported goods must be raised, at least until such a time as more railroads are put through. Thus far wheat and stock are the main products, the amount of grain varying with the amount of fairly level land available after clearing. In the rougher country only hay can be raised to provide for the few head of stock in winter, and not much hay, either. Although all kinds of cereals are grown, wheat and some rye are about all that is shipped out. The others are grown mostly for hay.

Starting from the Sacramento valley level, the land is spotted over with stunted oak, for much of the soil is gold-bearing and underlaid by cobbles, which are more plentiful than the soil itself, and such land is not very fertile as a rule. As the elevation increases and the rainfall likewise the trees increase in number; pines appear, also often stunted, then comes the manzanita, chaparrel and various underbrush, and finally when the rainfall is fairly abundant, can be found the fir and cedar. Where the soil is of fine quality buck brush will be thick.

Many old mining ditches are still used for irrigation as well as for mining. In other places springs are developed to provide water for trees or garden. It is one of the few places in California where the red clover luxuriates, and apple or pear trees can be seen of the finest size and thrift, growing in fields of red clover and rye grass. That is, where they are irrigated.

Although many hills have rather poor soil there can be found lots of very rich land, apparent in vegetation and in other ways. Oaks that rival the greatest valley oaks in size and beauty can be seen in many places, depending on style of country; also pine, fir and cedar of great size. It is largely a matter of location. One section will be all rough, rugged country with almost no land level enough to farm, whether the soil be rich or not. Another section will contain an excellent proportion of gently rolling land with fine, fertile soil. One lot of country will be covered with brush, another, especially on the north slopes, with firs and cedars, with some oak and pine. Another hillside will be rocky and poor. It is not a country that will support a very heavy population, but it could support far more than are now farming.

But the future of the foothill agriculture is bright. The close of the old mining period removed most of the population through the bigger part of the mining counties and thus the market for what was produced on foothill farms in large part disappeared. The pendulum has begun to swing in the other direction and wherever the railroad is within easy reaching distance, the fruit industry is going ahead with rapid strides, for it is a natural fruit country and in a later issue some important matters regarding the fruit industry of the foothills will be discussed. After a certain distance from the railroad is reached fruit opportunities rapidly diminish and other crops will have to be raised.

Goats are the biggest thing in the country for land development, as another part of the paper shows in some detail. They are an essential in clearing the land and give opportunity for bringing an immense amount of money into mountainous, brushy districts, and for supporting a great population. With an increased population and the clearing of greater quantities the production of tillable land can be vastly increased by the utilization of ditch water from mining ditches, now too expensive for a single farmer to buy when he, perhaps, has to carry that water ten miles, but cheap if there were dozens of farms to serve. The climate is suitable for almost any crop, like fruit, alfalfa, red clover, corn, the grain sorghums like feterita and Egyptian corn. More stock can be raised, or more grain shipped out. One of the greatest features of goat-raising is the manure left every night at the sleeping quarters and this is a necessity for mountain soil. More goats to clear land or to feed on brush indefinitely, more stock, more manure, more irrigation, and the climate, natural surroundings and diversified farming of the foothills will make it, as it is now where development is well along, one of the most pleasant, prosperous and interesting sections of agricultural California.

A THRILLING SITUATION.

William H. Maxwell, superintendent of the New York city schools, quotes the following paragraph from a composition written by a boy of 10 years:

"The villun curled his mustash and seezing the pure vurgin shreaks ha ha be mine or deths blud is on my head this dagger stabs thee to thy utermost sole ha ha vengunze vengunze. But the good hero kurses and says O hevins hevins stur won step and thy ded body lies at my door, lay won arm on the vurgins korpse and it was better if you was drowned with a millstone. Avarnt avarnt from this sweet korpses presunz."

THE ROAD DRAG.

Farmer's Bulletin 597 has just been issued on the use of the road drag. By the use of this tool dirt roads can be smoothed off in the rainy period and kept hard and in an excellent condition for travel. In fact, few things have proved more valuable for road work on natural or dirt roads than this tool and persons bothered by bad roads in winter will find it of value to write for this bulletin to the U. S. Department of Agriculture.

Control of Wire Worms and Cut Worms

By N. C. Grider, Agriculturist

Among the many insect crop enemies with which the farmer has to contend probably the cutworm and wireworm are most prevalent and destructive. During the spring of 1913 these pests were very numerous in many sections of California, causing a loss of thousands of dollars to the farmers of all kinds of vegetable crops, and in some localities the wire worm partly destroyed grain crops.

While in charge of the farming operations for a beet sugar company in Yolo county, the writer tried a number of experiments, probably none of them new, to rid the fields of these pests. Our crops were sugar beets, oats, barley, corn, alfalfa and some garden truck. The methods employed to combat the pests can be classed under the heads of poisons, irrigation, mechanical operations and soil treatment.

Poisons were found to be effective in handling the patches of garden truck, but the problems of poisoning the large beet fields were too many to be disposed of in the short time in which something had to be done.

The poisons used were Paris green in some cases and strychnine in others. Strychnine was found to be more effective against the wire worm and Paris green seemed to give the best results in destroying the cutworm.

Slices of potatoes and sugar beets were soaked for about half an hour in water containing strychnine and planted at an average depth of one inch a few feet apart in the parts of the garden badly infested. The ravages of the wireworm ceased within two days. When slices of potatoes and beets were treated similarly with Paris green the results were good, but in such cases the worms were from one to two days longer in disappearing. For this the writer is unable to account. When the slices of vegetables were placed on top of the ground the poisons had some effect in destroying the cutworm, but the worm seemed to prefer feeding on the growing plant and results were better when fresh beet tops were gathered late in the evening, dusted with a mixture of Paris green and flour and placed in bunches directly in the rows of vegetables. The worms then disappeared within three days. It was necessary to replace the withered leaves every evening with fresh ones.

Spraying the growing plants with a spray containing Paris green was effective in checking the ravages of the cutworm. The spray was made of one pound Paris green to 150 gallons of water. This must be continually stirred, as the poison has a tendency to sink, making the lower portion of the mixture of a greater density.

A dusting powder is made of one pound Paris green and 20 pounds of flour and can be sifted through a barley sack onto the plants. When strychnine was used ½ ounce of the poison was placed in 5 gallons of water and a little sugar added to overcome the hitterness of the poison. The solution must be stirred vigorously, as strychnine is difficultly soluble in water.

Usually the farmer is not aware of the existence of the pests in his fields until he sees them working on plants, but if he has any suspicions before this that they exist he should put out his poisons about a week before planting. Poisons should be put out in the fall of the year under boards, etc., to get the parent beetles and moths of these two species.

Irrigation was found to be effective in checking the action of the cutworm only when the insect was in the early stages of its larva growth. A field of 136 acres was infested throughout and the worms were discovered at the stage of growth when they had an average length of ¼ of an inch We flooded the field with a stream of 3,500 gallons per minute and the irrigation was completed in seven 24-hour days, making an application of .8 of an acre foot, which was about half the amount applied in our regular irrigation. The worms were destroyed before they could seriously damage the crop and nearly all the loss occurred to the part of the field covered by the last three days of irrigation. Irrigation had no effect whatever on the wireworm and had no effect on the cutworm except in the case just mentioned, and in that case it is possible that the disappearance of the worms may have been from some unknown cause.

When the nature of the crop permits, rolling is effective in destroying all species of insect pests. The growth of such a crop as the sugar beet is stimulated by rolling up to the time that the tops reach a height of three inches and we made it a practice of rolling whether or not the fields contained insect pests. A great many insects are killed by the process and the surface of the soil is made more compact, which makes locomotion difficult for the species that travel under ground.

The cutworm is a night feeder, lying dormant under this surface of the ground during the day and comes out during the night to feed on the foliage of the plant.

Rolling at night was found to be effective against this particular pest. The rollers used were 12 feet in length, 3 feet in diameter and weighed approximately a ton.

In the fall of 1910 the company treated two fields, one of 66 acres and the other of 107 acres, with an application of about 1,500 lbs. of per acre of lime waste. The application was made only for the purpose of improving the soil, but it is a remarkable fact that both fields have been free from the ravages of both the wireworm and cutworm since that time. Both fields were severely attacked by the pests previous to 1910.

In 1913 the experiment of planting lime with beet seed and also with melon seed was tried Forty pounds of quick lime were thoroughly mixed with 100 pounds of beet seed and 20 pounds per acre of seed were planted, making an application of only 8 pounds of lime per acre. The experiment was tried in three five-acre fields and in each case the plants were unmolested.

Two plantings of melons were destroyed by wire worms and on the third planting a little quick lime was mixed with the soil immediately around the seeds and in this case the plants were not molested. Care must be taken not to add too much quick lime, for, in slaking, too much heat might be generated, which would destroy the humus of the soil as well as the seed germ.

The writer does not claim that this evidence in favor of the use of lime is absolutely conclusive, but very strong. Other elements, such as time of planting, physical condition of the soil and climatic conditions, may have had something to do with the results.

As means of prevention the writer advises general cleanliness in farming. Any rubbish left around makes a convenient breeding place for pests. It is also advised that poisons be placed under boards and flumes, or any place that may be a breeding place and that the poisons be kept there the year round. This will not only get many of the parent insects but furnish a poison for the young larvae to feed upon as soon as hatched. Co-operation among neighbors is necessary, for the moths and beetles have wings and the worms can crawl from one field to another.

Intensive Dairy Farming for California

By W. M. Carruthers

Old time dairying is fast dying out. Scientific dairying is becoming more evident every day in California. Our climate environment and feeds combined with kindness, promptness and efficiency need no other requisite to lead the dairyman to success.

A well-tilled farm, ably managed, a bunch of good cows kindly and properly cared for, a strict accounting of all transactions performed, and proper sanitary conditions will go a long way toward success in the dairy world. Expensive barns and country home surroundings are not essential to practical dairying, although beautiful surroundings create a better environment to live in, creating a greater love to carry the work forward to success. A good roof overhead and a good bed underneath are two simple requisites which will always benefit the dairy cow.

The dairyman must be a persistent worker. A spasmodical worker will not make a successful dairyman, as dairying is every day work and twice a day, and the work must be done at a uniform time in the day to secure the best results. The cow knows when milking time comes and she does her best at that time. She also knows just as well when she should have feed and water and any neglect along these lines may easily turn the balance sheet against the owner at the end of the year.

The observing dairyman will notice any shortage of milk at milking time and if he is built to succeed he will immediately commence an investigation to learn the cause of the shortage. The business like dairyman will not guess at the cause or fail to try to remove it. If he is an intelligent man, he will study at all times the conditions he has to meet. He will wish to know the most economical ration to feed his cows. He will be figuring out the feeding value of his home-grown foods to know whether it is economy to feed what he has grown or sell a part of it and buy some food that, when added to his home-grown, will give him a better balanced ration, such as will help him to procure milk at the lowest cost. He will study to learn whether to have his cows freshen in the spring or in the fall to make him the best profit. He will try to inform himself as to the most profitable breed for his purpose. He will consider his location and markets and will wish to visit his brother dairyman to exchange ideas and experiences. He will subscribe for the best agricultural papers he can get. This kind of dairyman will learn to respect his business and himself and will feel there is an opening for him all along the whole line of agriculture.

He will not only be studying how to feed his cows, calves and pigs, but he will be studying how to fed his land. He will cease to be a soil robber, as he will realize that the farmer who reduces the fertility of his land is a robber without reason, as he is robbing himself. He will, if he has not already done so, get himself out of the rut which was made by the pioneers and has been worn deeper every succeeding generation. No one will hear him saying that his farm does not need fertilizing. He will know when nothing but butter-fat or butter is removed from the farm there is practically no fertility removed and that his farm with a sensible system of rotations will increase in fertility from year to year.

The dairyman of the future is sure to find that the consumers of milk will require a constant improvement in the milk supply from a sanitary standpoint. The public is awake to the fact that it has not been securing milk as clean as other foods and it will demand that it gets it, and the dairyman who is ready to meet this demand will reap his reward. This is right and proper. Milk and its products are sure to advance in price to a point where dairying will pay better than any other line of farming. This must be so or the farmers will not confine themselves to this business.

A dairyman will not spend his time with cows which do not make a profit. He will know the capacity of each cow and keep none which is not profitable. He will realize there is a wonderful opportunity to improve and increase the profits in this way. When we keep a cow per acre (which is a possibility) and she makes 400 lbs. of butter worth $100, and $20 worth of skim-milk at a feed cost of $50 and a labor cost of $20, we have a net income of $50, which is five per cent interest on $1,000. It requires a great effort to reach this mark, but when one is year by year approaching this standard, he is successful and happy, and should be making every one about him happy.

It is not practical for all dairymen to start in with registered herds. It may be all right for some who can see their way clear to do so. Every dairymen can improve his herd and dispose of the poor cows that do not come up to a profitable standard by testing every individual in the herd. This standard will vary in different localities, depending upon the cost of feeds, labor, etc.

It would not be policy in this article to state what bred would be best for dairy purposes, but the one selected should be one of the standard dairy breeds. Study the subject thoroughly, and then select the breed which you think is best suited to your wants. Anyone who expects to start in dairying should have the privilege of testing any and all cows he expects to buy to put in his dairy. See them milked; weigh the milk; take a sample and test it, or have it tested; then gure out what the cow is doing along the line of producing butter fat. This work may require some time, but it will pay in the end.

Anyone who is in the dairy business should test every cow to know what she is doing. Do not go guessing along with this work. A dairyman should raise all his heifer calves from the best testing cows, so that he can retain them in the herd. These heifers usually do more profitable work the first season, when they are only two years old, than the average cows one usually buys.

Many dairymen have so much to look after that they do not have time to look after the testing of their cows. In such cases set the boys to work and after they have followed this for some time, usually they become very interested when they see that it pays better to have the testing done than any other work that is done on the farm.

The old saying that the bull is half the herd does not express half the truth when he is selected and handled intelligently. The heifer calves are most likely to be like the sire, and the bull calves like their mother. The record of the cow's grandam on the sire's side should have the same interest to the owner as her dam's record. This is especially true when a herd of grade cows are considered. One should not allow a few dollars to get in the way of : curing a bull that has good individuality and the right heredity.

Do not put the bull in service before he is one and a half years old. This is more necessary when breeding for a dairy than for breeding for beef. The dairy bull should have plenty of exercise and must be properly fed. It has been demonstrated beyond dispute that an animal can be fed to produce strong bone and good muscle, and that is what is required in the dairy bull. A strong, vigorous, masculine bull will get a larger percentage of heifer calves than will a feminine bull and they are more likely to inherit the qualities of the bull's dam. Some may call this theory, but it is the experienced of forty years of some of the best dairymen in our land.

The successful dairyman usually has his heifers drop their first calf at a little over two years of age. Experience has taught that they make better cows to freshen at this age than when they come in later. These heifers should be handled from the time they are calves, so they will have no fear of the person who is going to milk them.

Care should be exercised during the first milking period to establish and fix the habit of milking as long as it is desirable. When they are allowed to dry up too early in their first period of milking they are more likely to do so the following year. This is the kind of work that has made it possible to secure the large yields of butter that we are now so frequently obtaining.

Intensive Dairy Farming—Miss Blaney After Making a Thousand Pounds of Butter in a Year.

Success With Alfalfa as Silage

In the great interest that is taken in silos and silo methods, the use of alfalfa for silage is often overlooked, it being generally considered that corn and only corn is good to put in the silo. This has proved a mistake in California, where corn is scarce and alfalfa cheap and plentiful, and many silo owners have been long using alfalfa.

Fred Hutton of Hutton Bros., Dixon, wrote to Hoard's Dairyman regarding their experience and methods with alfalfa, following an inquiry about alfalfa as silage, and his statements will be found of value by all contemplating the use of alfalfa in this way. In fact, it would be very reasonable to fill the silo with corn in the fall and alfalfa in the spring, if such procedure would appear desirable.

Mr. Hutton states:

We have on our farm near Dixon, California, the first concrete silo constructed in the Sacramento valley. It is 12 feet in diameter, 30 feet high and holds approximately 70 tons. For 11 years we have filled this silo with alfalfa twice a year, spring and fall. During that period we have never lost a single pound of silage.

We follow the rule of cutting the crop just a little younger than when cutting it for hay. It is mowed and hauled to the feed chopper immediately, preserving all the freshness possible. Many a load is thus stored in the silo within half an hour from the time it is mowed, and for excellence and succulence it cannot be beaten.

Damp and cloudy weather frequently prevails while we are filling our silo and the alfalfa is heavily laden with moisture. On these occasions we put up our best silage, a feed most relished by our cows. If these natural conditions do not prevail, we make a practice of running a small stream of water from a hose into the blower when filling the silo. In a few days after the silo is filled and fermentation is in process, the moisture may be seen oozing out around the doors and even through many pores in the walls of the silo, the liquid resembling new brew.

Our opinion is that a little moisture added to that in the alfalfa itself adds to its succulence and assists in packing it into the silo, the latter an essential which should not be overlooked. During the filling process the injunction to keep the silage built up high and well tramped around the sides of the silo should be kept in mind. There will be no spoiled or moldy silage if that practice is faithfully followed and the silo is up to the requirements as such.

We feed but little hay in summer, finding it more convenient to cut the alfalfa and feed it fresh from the field. The ground by this practice is at once cleared of the crop and ready for irrigation. By this method we are able to harvest seven and eight crops in a season, whereas it is possible to get not more than six crops where we allow our alfalfa to mature for hay. Our acreage is entirely taken up by alfalfa, and we have no land on which to grow corn, this furnishing the reason why our experience has been entirely with the former feed.

British scientists have made a synthetic milk from certain legumes and declare it will produce first-class butter and cheese. So far, however, no farmers seem to be selling their dairy cattle, nor do the creameries seem to be closing their doors.

The proper housing of livestock means actual financial profit to the owner.

Commercial Aspects of California Prunes

California is the greatest prune producing country of the world; the prune industry now has as promising a future as ever before in history; California is actually exporting more prunes per year than she is producing, besides supplying a big domestic trade; all of which goes to show that the California prune is worth talking about and worth looking after.

The prune is nearly, but not quite, the greatest deciduous fruit in California, the number of prune trees being slightly surpassed by the number of peach trees, according to the figures of the State Commission of Horticulture, issued late in 1912. These figures showed 7,920,799 bearing prune trees and 1,123,854 non-bearing; also 8,341,036 bearing peach trees and 2,104,708 non-bearing. The peach crop, however, goes for three uses—drying, canning and shipping—while the prune crop all goes to the one use—drying—there being on a rough average 130,000,000 pounds of dried prunes produced in California per year, as compared with 44,000,000 pounds of dried peaches. Only the raisin stands close to the prune in weight production in California, and the raisin is one of the best known foods in the world.

The prune is likewise very typical of California's special characteristics as a fruit country. You can grow fruit of some sort or other almost any place on the globe outside of mountain tops and Arctic regions. Of all the United States, California only produces notable amounts of dried fruits. Oregon does cut considerable figure as a producer of prunes, but those are kiln dried, not sun dried. Omitting dried apples, the amount of dried fruit produced outside of California and Oregon is comparatively small. California shines with the glory of her sun dried fruit of all kinds, and the prune outshines them all in fame and value.

Prunes are produced in France and in Bosnia and Servia. Oregon produces quite a few, though of a different variety and type than those grown in California, and California is looked upon as the great prune-producer, not only of the United States, but of the world.

Looking toward the markets, the prune has a high standing, for as a dried fruit it is in everybody's mind, as it is in everybody's mouth, and the biggest problem of marketing is to attract public attention. True, the publicity given the prune is of the boarding-house joke type, but they joke about mothers-in-law as well as about prunes, and both are necessities and highly desirable under certain conditions. If the prunes were not so desirable and used so much, they would not be spoken of so much either, and what everybody knows and likes, everybody will eat when it is put before them. With proper marketing, it would be practically impossible to produce too many prunes.

The prune has a wonderful advantage also in the markets by being the only fruit graded and sold on a scientific and accurate basis. Peaches may be worth six cents and apricots ten or any other figure, but there is always the difficulty about deciding how near any lot comes to standard in size or quality, always bargaining to do and a chance for the grower to get the worst of it. Big and little, clear colored and dark, all go in the same bunch, though good fruit will be worth several cents more than poor, undersized stuff. It demoralizes the standard of quality which the growers are encouraged to produce; it hinders the trade, which should go smoothly and without friction for the best development of the market.

Prunes are graded out scientifically, and both grower and packer know definitely what any lot is worth. The same basis used in grading between packer and grower is used without change as far as the retailer. Buying is rendered easy and fair because good prunes command good prices and poor prunes poor prices. The grower is encouraged to have the largest and best fruit. Such a system applied to other dried fruits would be one of the finest things ever accomplished.

Prune-Drying Scene in Tehama County, Near Corning.

Although every prune grower knows the method of grading prunes, an explanation always seems to be appreciated. The quotation price for prunes applies only to prunes of certain, definite size, 80 to the pound. Smaller prunes are paid for in proportion to size, also larger prunes. For every point difference in size a difference of $1 per ton is made in price, a point being one more or less prunes to the pound. Thus 50-60's mean that from 50 to 60 prunes are needed to make a pound, a difference of 20 to 30 points from basis existing. Thirties, which are about the largest prunes that can be expected under ideal conditions, require only 30 to the pound. There is a difference of 50 points, or $50 per ton, between prunes of that size and 80's, so that with a basis price of 4 cents, or $80 per ton, a grower with 30's would receive $130 per ton for his fruit. For 50-60's, or say 55's, he would receive $80 plus $25, or $105 per ton, and so on, whatever his prunes happened to be.

Down to the smaller sizes he would be penalized, so that with prunes averaging 95 to the pound he would get $15 less per ton than basis price, and on a basis price of 4 cents, or $80 per ton, he would receive only $65 per ton, or 3¼ cents a pound. This method of selling is scientific, simple, highly desirable in encouraging a fine quality of fruit, and excellent in paving the way for decent, honorable trade.

The amazing statement made at the start that California is actually supplying the United States with prunes, with some small help from Oregon, and also exporting more than she is producing, is a fact and indicative of the wonderful possibilities financially and otherwise for prune production.

It is the result of two things, a greatly increasing demand for California prunes abroad, and the fact that a few years ago more were being produced than used, so that an ever-increasing surplus was developing. Just in the last few years this surplus has been reduced so rapidly that the supply can not equal the demand, and prices this year show it.

In the season of 1912-13, the last for which figures are available, the United States exported 117,950,875 pounds of prunes. The production for 1913 was only 96,000,000 pounds.

The growth of exports has been amazing. In 1900-01 it was only 10,021,564 pounds and in 1901-02, 23,358,849 pounds, which years were typical of exports at that period. Since 1907-08, the exports by years have been as follows: 28,148,450 pounds, 22,602,288 pounds, 89,014,880 pounds, 51,030,711 pounds, 74,328,074 pounds and the 117,950,875 pounds already spoken of. These were exported in a year when the price ran about 3½ cents, which is fair enough if the crop is good.

The reason for this growth has been the increasing familiarity in Europe with California prunes. At first California prunes were used in Europe, mostly in Germany, simply to make up for short crops in France and the Balkan countries, but a series of bad prune crops in Europe so familiarized the trade with the California product that its position is secure and nothing but high prices can prevent a continual increase in European demand.

California production during this time, or beginning with the season of 1908, was 57,000,000 pounds, 150,000,000 pounds, 80,000,000 pounds, 190,000,000 pounds, 205,000,000 pounds and 96,000,000 pounds. Divide this among 8,000,000 trees, or counting 100 trees to the acre, and the production averages 1,600 pounds per acre, about four-fifths of a ton. It had better be two tons and could be, though a large part of the orchards would have to be uprooted if such average production were to be achieved. There is no profit and no sense in trying to grow prunes or any other fruit on poor land.

Yields of six and seven tons of dried fruit per acre have been secured some years on good land, and there are orchards, outside of the Santa Clara valley and in the valley, that have averaged three tons per acre and better. These yields have come from a combination of good soil and good care. Good soil is likely to be found owned by the man who knows how to care for his fruit.

In the Santa Clara valley, in which two-thirds of the prunes of California are grown, the one great thing that has cut short production weakened the trees and set back the industry has been the pear thrips. The attack of the thrips has to be taken into consideration in recommending change in pruning methods and in other kinds of orchard operations. This is the greatest single problem in the valley, and it has been solved by proper spraying at the right time. The thrips, in fact, has done for prunes to a certain extent what the blight has done for Bartlett pears, it has made prune growing very profitable where the trouble does not occur, by lessening production. The Santa Clara prune orchards would be far better to-day, and have several years more good service before them than they have, if it were not for the thrips. However, the thrips can be completely controlled at moderate expense. It simply requires watchfulness and attention to business, rewarding the man who attends to business at the expense of the man who doesn't, which is the proper encouragement to good husbandry. From the standpoint of horticulture there is no reason to avoid prune growing, and some excellent reasons for welcoming it.

Outside of the thrips and the peach root-borer, both of which are of limited distribution and easily controllable, the prune has so few troubles that it can almost be said to be a lazy man's crop. Perhaps it would be further advanced to-day if a stricter attention to business were required.

Unlike nearly every other fruit except nuts and citrus varieties, there is lots of leeway in harvesting, as the thing to do is to wait until the fruit falls, and even then there is no special hurry about picking it up. A slight shortage of help, a hot spell at harvesting which with other fruits would hurry ripening, are of comparatively slight importance with prunes. Pruning costs are small, perhaps too small, spraying costs, especiallly if there are no thrips to kill, little and often nothing. Drying costs are much less than peaches and apricots which require cutting, sulphuring and such treatment.

After the prune boom struck the State in early days of California horticulture, prunes were planted almost everywhere and were taken out or died almost everywhere, the Santa Clara Valley retaining the laurels as a prune section and keeping the fame of the prune district of California. Of the nearly 8,000,000 prune trees in the State Santa Clara county has over 5,700,000. However, at this late date the prune is attaining fame elsewhere. A Healdsburg man will get mad any time you speak of Santa Clara prunes and tell you that Healdsburg prunes are used to face San Jose fruit. Then a Healdsburg packer states that he has seen prunes from the Sacramento Valley as fine as any grown around Healdsburg. In fruit districts of San Joaquin county, in many parts of the Sacramento Valley as far north as Shasta county, there can be found not only prunes produced plentifully, but orchardists enthusiastic over prune profits and the magnificent yields. All of the bay counties, barring Alameda which is not hot enough, grow prunes and down in Tulare and Kings counties they are considered profitable. There is lots of room for the prune to expand.

In the Sacramento Valley and in some other places, there is a risk of rains at drying time which makes a drier, if not an actual necessity, at least a fine insurance against loss, though it will not have to be used every year in four. Heavy yields and good quality fruit have made good prune orchards pay extremely well, and the cost of a drier is too small to keep any person hesitate about planting prunes for fear of rain in harvest time.

It is a peculiar feature that although peaches ripen sooner in the

(Continued on Page Twenty-Six)

The Largest Farmers' Union in California

—By the Editor—

The Farmers' Union local at Morgan Hill, Santa Clara county, is the largest local in California, and it is more than that. It is an organization that is the dominant factor in the business life of the community and approaches closely the ideal through which the farmers by their own agency can dispose of whatever they produce on the farm, or buy whatever they may need for the farm. Note particularly the latter feature.

Everywhere nowadays it is the fashion to pitch into the middleman, to tell what a crook and a robber he is and to otherwise blame upon him the high cost of living and to develop within ourselves a thrill of righteousness on account of our being mulcted by him (if we are, most of the trouble is mere talk). However that may be, the Farmers' Union local at Morgan Hill is cutting out the middleman both coming and going and is well on the way to get everything for the farmer in the way of price for what he produces, that can reasonably be expected and provide him with what he needs at as reasonable prices as possible.

By so doing, the union has become in a way a public institution. It has a total of 300 members, representing approximately 75 per cent of the families within a radius of five miles from town, though not including the town itself.

Plan of Organization.

The Farmers' Union, most of us know, is an organization with a dual purpose (though it is not the intention to say much about organization here). There is first the Farmers' Educational and Co-Operative Union, which is mainly social, as can be expected from the name. That part of the union resembles closely in intent and activity the Grange. The organization is of national scope, having been started in Texas, and being particularly strong in the South, the Northwest and parts of the Middle West.

The ultimate idea is likewise to undertake for the members the selling of farm produce, this being the way the movement started, and in many places separate organizations are formed by members of the Educational and Co-Operative Unions to conduct commercial operations. These commercial organizations are stock companies, but are organized on a non-profit basis. They are simply known as Farmers' Unions, the words "Educational and Co-operative" being omitted. One must be a member of the social branch to hold stock in the commercial organization, but can belong to the social branch without having any connection whatever with the latter. So much for preliminary explanation.

The Morgan Hill Farmers' Union was formed in June, 1909, for the sake of packing and selling the prunes of members. The actual selling is done not by the local, but by all of the locals through the California Farmers' Union, headquarters now in San Francisco, formerly at Fresno. Shares were $25 each, no one to own more than six shares, or to have more than one vote.

Suffice it to say that the prune packing business of the Morgan Hill Union has flourished and prospered, and about 80 per cent of the prunes produced in the district are marketed through it. There is one story for the prune business, another for the business of buying goods for the members. As there is lots of co-operative marketing and little co-operative buying in California, it will be the latter only that will count right here.

In January, 1913, it was decided to make use of the packing house during the quiet season by handling feed and such goods for the members. No change of organization had to be made to do this, the articles of incorporation permitting such business. The amount of business month by month from the buying standpoint alone has been as follows, showing the growth and corresponding popularity of the plan:

1913.	
January	$234.66
February	1,397.84
March	435.31
April	338.27
May	927.95
June	928.14
July	1,420.03
August	766.88
September	2,035.04
October	2,621.68
November	952.26
December	1,366.71
1914.	
January	$1,006.51
February	1,342.21
March	689.36
April	1,329.15

All of this business is attended to by the manager, Walter S. Breton, and one assistant, who would be kept at the house all year anyway to attend to the small, but necessary business of the prune handling after the packing and first big rush of prune shipping are over. In fact, there is room yet for a good deal of growth before extra help the year round is needed. This buying business helps to lessen the cost of handling the prunes, for overhead expense that otherwise would be charged against the prunes is shared in part by the buying business. That was one of the reasons for starting it.

Buying at Cost.

Whether it is prunes or feed, all goods are handled at cost price, with a slight margin to be on the safe side. No attention is given to the ordinary retail price of anything. Just enough is added to wholesale price, freight, cost of handling, etc., to justify the transaction and the farmer gets the goods at what is in effect cost price, and when he sells his prunes, or eggs, he gets what is in effect full price also. There must, of course, be sufficient margin to cover upkeep of building, etc. Also there is supposed to be sufficient to pay moderate interest on capital invested.

In the year ending May 1, 1913, there was margin enough to have a dividend of 30 per cent, if such could have been paid. Only eight per cent was paid and the rest went into the treasury to provide better equipment and facilities for operations. The following year figuring was so close that only a little over eight per cent was made, which the members voted to turn in entirely to the packing house for increased equipment. Thus it can be seen that the organization is not intended to make money at all, but simply to give service of buying and selling.

The main trade of the Union thus far is for poultry supplies, mostly wheat, then mixed feeds, bran, middlings, and such material. All of the big poultrymen of the vicinity are buying through the Union, and a car a month is purchased. The small farmers, or rather, the farmers who may have large prune or other interests and only a few fowls, also get their wheat through the Union and so save several dollars a ton at the least on their wheat.

But the trade has grown in other ways besides feed for the poultry, barley and hay for the stock, and such things. The flour of the members is being all bought, and this forms the ideal of simplicity and directness of distribution under our modern complicated civilization. This flour is purchased from other Farmers' Unions which produce the wheat and manufacture the flour.

Producer to Consumer.

The Farmers' Union is very strong in the Northwest. The farmers there in Farmers' Unions in the grain district own their own elevators and even their own flour mills, all run at cost. Farmer Jones of Washington cannot of himself make flour of his wheat and ship to Farmer Smith of Morgan Hill, as some rather impractical theorists think should be done with all farm produce, but Farmer Jones by joining with other farmers can have that flour made and without attention or worry on his part some of that flour is shipped down to Morgan Hill and Mrs. Farmer Smith makes it into hot cakes, biscuits and other such forms for Farmer Smith and the little Smiths. Farmer Smith pays more than Farmer Jones receives, but there is no waste and all of the difference goes for freight and for the conduct of necessary business. It is the ideal of direct selling, though in the nature of things it cannot as yet be applied very extensively. Farmer Smith cannot eat all of Farmer Jones' grain, nor Farmer Jones all of Farmer Smith's prunes, but each is helped some by dealing directly with the other's agency.

There is more direct dealing, even more direct than this, relating to potatoes. Mr. Breton sent word to the members last fall that he would like to buy a car of potatoes if sufficient orders were received. Receiving the orders almost immediately, a delegation went down to Salinas and visited a number of the potato growers until they found one whose potatoes suited them. They were the best obtainable and were disposed of in, a week for $1.75 per hundred, prices last year being very high. The potato grower in that case got everything possible and there was less loss in transit than with the flour. In fact, the buyer got all the good, to tell the truth, as the potatoes were bought for exactly what the producer sold similar potatoes to a city dealer the same day.

Sugar, a ton at a time, fertilizers, spraying materials, axle grease, soap, and similar materials are also being handled, goods being bought only when there is a demand for them. What it will grow to cannot be stated. As yet, however, the kind of goods handled are few in number, and bought only because they are desired, or because members are continually coming in for them and everything bought is sure to be moved in a short time. There is just the ordinary prune packing house and office for a plant.

Changing the Egg Trade.

As a necessary accompaniment to the handling of poultry feeds there developed a trade in eggs. Very naturally, a farmer or farmer's wife would be in a peculiar position to take the ranch eggs to a grocery and be buying wheat and other poultry feed from another place. Thus those who bought wheat, very naturally had to get the Union to handle the eggs also.

There was a big saving for the farmer each way, for the grocer had been making a big rake off each way. He had been making a big profit on the wheat, and then he had been paying six or seven cents under quotation for the eggs.

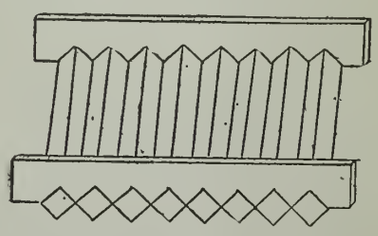
The Union needs half a cent a dozen margin on the eggs for cost of candling and other handling, and receives a cent less than quotation, when freight is counted. The result is that it can pay 1½ cents less than quotation. This is for the small lots of eggs. Regular poultrymen who have large quantities of eggs do their own candling, have their own cases and own dealers, so sell direct. The farmer with a couple of dozen eggs a day, or a few more, takes them directly to the Union in bucket, basket or other such receptable and the eggs are candled and shipped.

The average farmer is unlikely to take the same care of eggs as the regular poultrymen, but Mr. Breton has tried to have all bring in clean eggs only and to see that all are fresh and good, and members have all showed a willingness to provide as good a product as possible. As this has meant cheaper feed and higher prices for the eggs, the work of the Union has given poultry production among fruit and general farmers an impetus which has affected the whole community.

There are almost everywhere in California co-operative organizations that have solved in part the problem of the farmer in the marketing of what he produces. Practically all of these also purchase something, if it is only shook or material in which to ship material marketed. A few are going farther by degrees, buying first one thing, then another, and as they go they are solving the problem, not only of selling what the farmer produces, but also of buying what he needs. Such success is not obtained by starting to do everything at once; it is more a question of growth and of good, experienced management, but the extent of successful farmers' organizations in California to-day indicates that we are on the right path to give the farmer what is justly his due.

FINE CLOD CRUSHER.

The accompanying illustration shows a clod crusher used by J. E. Hassler, horticultural commissioner of El Dorado county, on his ranch five miles northeast of Placerville. It is simply, easy to construct, durable and



far more effective and satisfactory than the regular clod crusher, made by nailing four or five two by tens together.

The description of this clod crusher appeared in an Eastern farm paper thirty years ago, and it seemed so good that Mr. Hassler constructed a crusher like it and has been using it or a successor ever since. The method of construction is apparent from the diagram.

The side pieces are two by eights or planks of about that size. The cross pieces, which crush the clods, are four by fours put on with one edge down. The side pieces are sawed off on the lower edge in stair fashion so that the four by fours will fit in. These are bolted onto the side pieces rather than being nailed.

A crusher of ordinary size will be about five feet wide and about ten four by fours will be used, although only eight have been shown in the illustration.

The crushing edge of the four by fours are covered with sheet tin, or a strip of iron is nailed along, and in this way the sharp edge will be kept intact for years and crush and smooth the clods in most up-to-date and approved fashion. For effectiveness it is greatly superior to the ordinary clod crusher previously referred to. Once used, always used.

Rabbit Control on a Cactus Ranch

By J. L. Considine, San Diego

There are thousands of idle acres in San Diego county which have never been scratched, whose capacity for producing staple foodstuffs has never been tested.

This land has never been given a chance to show what it can do. Brushwood and wild oats cover its surface and much of the soil itself does not look invitingly rich.

But it will take on new possibilities when the stream of new settlers comes steaming up the coast from the Panama canal, intent on making new homes. Many of these homemakers will come from parts of Europe where soil is scarce and where all their lives they have known nothing but intensive cultivation.

The new dry hillsides of San Diego county will look good to those people and they will raise grapes and figs and olives and such staples as they have studied and succeeded with. Their thrift, inherited for ages, will provide the means for first payments on tracts of cheap land, and their habitual industry will in a few years make the land pay for itself.

Old San Miguel mountain, 17 miles southeast of San Diego, looms up 2,700 feet above sea level, and along its insteps and around its base there are many miles of land wasting itself on wild oats and brushwood. In that neighborhood, bordering on the Upper Otay reservoir, the H. N. Timms ranch of 320 acres is demonstrating what can be done with these hillside slopes without irrigation. There are thriving patches of grapes, figs, peaches and apricots, with flowers and shrubbery around the house, all flourishing. But the main feature of this dry farming is the acreage of spineless cactus set out ten months ago. On one patch of 78 plants there are now 650 new plants or slabs. Another patch of thirty plants has 750 new slabs. Altogether, Mr. Timms has growing more than 5,000 cactus plants which will produce by the coming fall more than 100,000 slabs. The original cost of the plants was $1,500 and if the slabs raised this year were sold at the same ratio they would bring $30,000.

Another plant that is being tried out at the Timms ranch is the wyula, or rubber plant, which gives great promise for the future. The plants were set out last March, and they are now blooming and showing that they are at home in that region. Much of San Diego's outlying districts are adapted to the raising of this plant. It is raised from seed which is very small and hard to gather, and is valued at $5 an ounce. The great growth of rubber consumption makes the demand for wyula almost unlimited.

A history of Timms' fight to demonstrate the ability of this soil to grow cactus would be incomplete without an account of his warfare with the rabbits.

When he planted the first cacti the rabbits came to make their home in the shade. Not being accustomed to the cactus as an article of diet, they shunned it at first. But a gastronomic Columbus among them nibbled a cactus plant one night and that was the beginning of the end—for the rabbits.

All the other bunnies eventually followed the example of this imitator of Adam in eating the forbidden fruit, and the ultimate outcome was expulsion from their Garden of Eden.

It did not come suddenly. But the preliminaries were agreed upon, as the sporting writers say, when Timms appeared on his ranch one day to find that the heart had been gnawed out of a number of his most promising plants. Then the fire danced in his eyes.

"We'll have to get rid of those rabbits," he told the hired man.

He first hired a hunter to shoot them. But the rabbits were wary and the hunter did not get enough to keep two men in meat.

Strategy was next resorted to. All around the cactus patch was run a line of poles, strung with a rope, and with arms from which hung many bells. A rabbit entering the patch was all but certain to bump into one of these poles, and the consequent din was something appalling. Timms' horse, a staid old family pet, was so frightened at the first alarm that he ran away and was found a mile from the house next morning.

H. M. Timms Among His Young Cactus Plants.

Inspection of the cacti indicated that the rabbits, too, had been alarmed. But they came back and in this case it proved a true saying that familiarity breeds contempt. After the first few nights the clangor of the bells held no terror for the rabbits, and after a while the continual bell-peals at night and the accompanying devastation of the patch indicated that they had grown to like the music of the bells so well that they held the nightly concerts to soothe their digestive processes.

Timms was so exasperated that he determined on the use of a remedy so drastic as strychnine. He procured quantities of cabbages, carrots, turnips, cantaloupes—all the conventional rabbit foods, in fact—dosed them liberally with strychnine and placed them so the rabbits, in going to the patch would have to pass over them.

He had overlooked one point, however. These rabbits, having been raised in a desert region, were unfamiliar with the taste of those vegetables and so callously passed them up in favor of the cactus, with which they were by now so well acquainted. The only victims were wolves, a few of whom were found dead at the water hole as a result of eating doctored cantaloupe.

Timms reasoned now that if the rabbits insisted on eating nothing but cactus, the only way was to poison the cactus. So he made a wash, with strychnine as the base, and painted a number of the plants. The plan succeeded even more thoroughly than he expected, for it not only poisoned a number of rabbits, but 500 of his plants died from an overdose of strychnine.

Convinced by now that violent measures were futile, Timms enclosed the tract with one-inch wire fencing, and since that time not a rabbit has been found in the enclosure. "Not even a snake," adds Timms. The hired man did encounter a squirrel, which was so bewildered at its inability to make its way out again that it ran directly into his hands.

Improving Grain by Head Selection

The search for new varieties of seeds and plants is one of the most attractive things there is, and gives promise of great improvement in production. Sometimes old varieties unknown in a district are secured by selecting special heads and using them for seed. Some times new and valuable crosses can be secured.

In Eldorado county two score years ago there was a variety of rye of much local fame which dropped out of sight 25 years ago, but has recently come to light again, having a rather peculiar history.

This rye was called Wild Goose rye, from its origin. A Mr. Cunningham of Pleasant Valley killed a wild goose in 1867 and found in its crop several grains of large, white rye, as large or larger than wheat kernels and planted the seed raised so that in a few years there was all the seed that anybody wanted and the rye was used like any other rye. Then for one reason or another it was gradually forgotten, or farmers who wished to plant it found that they had no seed and did not know where to get it and it disappeared.

Last fall, however, Willis Dean of Fairplay secured a small handfull and is raising enough in his vegetable garden to get a good start, so it may come back into use again.

The rye looks something like Mammoth White rye and is fully as vigorous a grower, judged by two lots grown under practically the same conditions. The heads are a little longer and fuller, and the grain considerably larger. A very valuable feature is the leaves. Rye straw is nothing but a lot of sticks as a rule. Wild Goose rye has real leaves about the same as most small grains, and wide leaves that look as if they would provide good fodder.

J. E. Hassler, who used to grow it years ago, states that this rye actually provides a fairly good quality of hay, much superior to ordinary rye, as the leaves would indicate. The grain, however, is practically valueless for milling, but makes good hog feed. He used to value it highly for this purpose when boiled and fed with potatoes. It is not known whether it is an old variety or whether the goose had been eating a chance head that had developed as a "sport" or by crossing. Whatever it is, the variety seems promising.

Speaking of selecting seed, several interesting things have occurred in the district. The Stewart brothers of the Shenandoah Valley, just south in Amador county, two years ago hand picked five sacks of red oats and raised seed from the same. The results were so favorable that they sold their crop of oats for seed to farmers who saw the oats growing, for $50 per ton. As the production was heavier than with the ordinary oats, the work of selecting those (ve sacks of oats paid big wages.

Ollie Harrell of the Shenandoah Valley a couple of years ago also noticed in a field of Little Club Wheat a few heads that were much longer and fuller than the others, picked them out and planted them. A number of farmers are growing this. The writer secured a number of heads typical of the Big Club as well as field run, and submitted them to Prof. J. W. Gilmore of the Division of Agronomy of the University of California for identication and comment. These were secured on the ranch of H. N. Vennewitz, Mr. Aukum. In the field were a good many plants of the Little Club variety, either on account of impure seed, or reversion to type. The sample submitted to Prof. Gilmore was thus typical of the field. He states:

Of the eight heads contained in this bunch two of them are heads of Little Club (as was known) and three of them are heads of the Australian Club. The Australian Club was produced by crossing the Little Club with some other variety, I think either a Bluestem or Fyfe, though I do not know positively. The other three heads of this bunch I am not able to identify, though I am under the impression that one of them is the well known Bluestem, or possibly the White Australian.

"The Club wheats are most highly prized in California for their non shattering qualities. They are not especially high yielding wheats, but owing to the harvesting methods practiced in California, they are in demand because they retain the grain long after the field is ripe, and are not much attacked by birds—then, too, they are acceptable to the miller.

"The Bluestem is an old well-known variety that will probably remain a favorite in many localities by careful selection and the practice of good culture methods it can be maintained as a variety of high qualities and yield.

In view of Prof. Gilmore's statements and the facts of origin, there seems to be a possibility that the wheat is a new cross between Little Club and Bluestem, or perhaps some other cross. However that may be it is an exceptionally fine grower and producer and much superior for the foot-hills to the Little Club. As the essential point of the matter is that the farmers have something much better than they had before through selecting choice heads, it does not matter greatly about the source of same.

On the Vennewitz ranch another kind of wheat was taken and submitted to Prof. Gilmore, which he states to be the Propo. Mr. Vennewitz found a few heads of this in a field of Sonora wheat, and as the heads were better and the straw higher and more vigorous, he is growing some more seed to try out in field form. Although the Propo is not a heavy yielder, it is the leadig variety of the Salinas Valley and other coast districts. It seems less desirable than the "Big Club," but may prove valuable in the foothill country, and would be interesting if its merits were known there only through seed development from some chance head.

As mentioned once before, the wheat industry of the world would be revolutionized if the very few "sport" heads of value that develop every year were found and used for seed, and the instances above related show what has been done in one small part of California simply by attention to this matter.

Our idea of a sorry time is playing a game with a person who won't learn the rules or won't follow them if he has learned them.

Cannery Demands for the Different Fruits

By C. H. Bentley, California Fruit Canners Association

(California fruits have as high a reputation canned as dried, or as shipped green, though less is said about them. In the following, which is part of an address by C. H. Bentley, sales manager for the California Fruit Canners' Association, definite information on the standing of nearly all varieties of canning fruits in California is given. There is very little definitely known on this matter by the average fruit grower and figures too often are given in the number of cases of fruit of various sizes shipped, which means little in terms of fruit tonnage. What is given here should be of great value in leading one to decide in making fruit plantings the coming planting season.—Editor.)

It may seem strange to some of you who have fresh apples all the year, but there is considerable business in California canned apples. These are chiefly put up in the large tins for hotels and pie bakers, peeled, cored and quartered, ready for use. They are more convenient and frequently cheaper than the fresh apples. A limited quantity is packed in smaller tins for table use in the tropics, where fresh apples quickly spoil. About 2,500 tons are canned annually in California, chiefly Newton Pippins. The firm white apples are required.

For the best quality of table apples the average price is about 1 cent per pound. The undersized fruit is largely used for the pie grade and the average price paid is from $10 to $12 per ton. Wormy apples are useless on account of the additional waste and expense in coring and disfigurement of the apple. Thanks largely to the University, apple growers have been shown that the codlin moth is not inevitable nor the plague of vengeance.

The apples for canning purposes come largely from Sonoma, Santa Clara and Santa Cruz counties. The growers have the opportunity for selling for fresh fruit shipment, for canning or for drying. In suitable land and locations growers have prospered, but with enormous increase in the acreage of Oregon and Washington, California has serious competition and the relatively small demand for canned apples offers no great aid to the solution of this serious problem.

Apricots.

The canner is of more importance to the grower of apricots, for this variety, like that of pears and peaches, is exported all over the world to all countries of importance that have not set hostile tariffs against us. In a normal season 20,000 tons of apricots are canned in California. The average price for the past five years at the canners is $30 per ton. Fruit of good size, with a clear skin, golden color and firm texture, is desired.

As a rule, apricots are packed unpeeled, as the skin gives a peculiar flavor and character which are desired. This makes the canner very particular about apricots being free from fungus or skin blemish. The Royal, Blenheim and Hemskirke varieties, as grown in Santa Clara valley, give best results to the canner. They have high color, flavor, firm texture and are usually clean and of good size.

Moorparks have a flavor preferred by many, and they grow to larger size, but they ripen unevenly, one-half ripening before the other, and the upper portion about the stem is usually green and hard after the lower portion is full ripe.

The fruit grown in the interior as well as the southern part of the State is not so desirable in color, flavor or texture, although there are exceptional locations. With apricots the growers have three opportunities for disposing of their product, as the canner must compete with the shipper and the drier.

Cherries.

As with apricots and apples so with most of the important canning varieties of cherries, the dealer and consumer demand a clear transparent syrup. For this reason our Royal Ann and white cherries in general are preferred, while the black varieties are not popular with the canner. The Royal Ann is wanted for its size and firm texture. When it ripens in the sun and takes on its beautiful red color, it is not so desirable for the canner as the waxy white ones, which grow in the shade. The high colored ones turn a russet brown after processing and the uninformed buyer thinks the fruit is bruised. Cherries are stemmed, washed and canned whole without pitting. Skin blemishes, bird pecks and cracks are accordingly very conspicuous and undesirable. They grow to perfection in the north central counties of the State, are bought by shippers and by packers in Maraschino, as well as by canners. An average price would be from 5c to 6c per pound.

The so-called soft white cherries are less desirable because they have not the firm texture, do not stand handling nor processing so well as the Royal Anns and are smaller in size, although some varieties, like the Rockport and Buttners, are quite superior to other soft white varieties. These usually sell to canners for 1½c to 2c per pound less than Royal Anns. As explained above, black cherries are not popular in cans, as the color darkens the syrup and the canner must sell at a much lower price, and then only in a limited way. He usually pays about 3½c to 4c per pound. About 1,200 tons of Royal Anns and whites are used annually for canning and probably 450 tons of blacks.

Grapes and Nectarines.

The Muscat or raisin grape is canned to a limited extent. The fruit is merely stemmed and washed. About 1,000 tons are used annually at a price of about $12 to $15 per ton.

Nectarines are used in a very limited way. Some varieties have a high color at the pit, which discolors the flesh of the fruit when processed. All varieties must be well ripened to secure the flavor, and yet in this condition the fruit is so soft and juicy as to make it unsuitable for canning purposes. A very limited quantity is used and the fresh and dried fruit markets are more desirable for this variety.

Peaches.

The canner wants a peach of golden color, of good and symmetrical size, without color at the pit and the pit small. For these reasons, of the freestone varieties, he prefers the Muir and the Lovell. The latter usually commands a premium over other freestone varieties. The chief objection to it is that it ripens in late August when the canner is overtaxed with many different varieties of fruit. If a peach similar to the Lovell could be developed to ripen in July or in the middle of September it would be in high favor.

About 24,000 tons are canned annually, with prices about $22.50 per ton for Lovells, $17.50 for other varieties like Muirs and Early Crawfords. Other varieties which may do well for shipping purposes, like Alexanders, Hale's Early, Mary's Choice and Picquet's Late are not desirable for canning.

In spite of the increased trouble and expense of removing the pit, yellow clings are the most desired of all California canned fruits, and more of these are canned than any other variety. Fortunately different varieties have been progagated from the old original lemon cling, so that the canner gets an almost continuous season from late July until late September, beginning with the Tuscans, Orange, McDevitt, Sellers, Phillips and ending with the late Levi clings.

Owing to the congestion of peaches, pears, plums and berries in August, the early Tuscans and late Phillips and Levi are preferred by canners. The Phillips is perhaps the most popular, by reason of the firm texture, golden color, small pit and uniform, symmetrical size.

An average price delivered at the cannery would be about $25 per ton for Phillips and Tuscans, $20 for other varieties.

As with the freestone varieties, the clings are graded, washed, peeled, halved and pitted, although in the case of the clings a considerable demand has developed for slices. About 35,000 tons are used for canning.

The white Heath clings were formerly quite popular, but they apparently did not bear well enough to suit the growers, and inferior varieties of white clings, like the George's Late, were planted, which were not at all satisfactory to consumers. They were tough, flavorless and red at the pit. With a good white cling like the McKevitt, particularly one ripening in September, this trade can be gradually recovered, and there is a need for this fruit. Canners will pay a premium over the price of yellow clings. About 900 tons are used for canning.

Bartlett Pears.

Bartlett pears are in good demand and canners use ordinarily about 20,000 tons per annum. The prices range from $30 to $40 per ton. Sometimes, in years of light crop, running to higher figures. Canners usually buy on specifications requiring the fruit to be free from scab and worms, to be of symmetrical shape and not less than 2¼ inches in diameter. In preparation the fruit is peeled, halved and cored.

The pear is a very satisfactory fruit to handle, because the fruit is better when picked before ripening. it is hauled when firm and is accordingly delivered to the cannery free from bruises such as often come to other varieties. In the cannery the fruit is graded over and worked up as it ripens.

While there has been serious difficulty with the pear blight, this variety seems to promise the grower the best results for years to come, assuming that he has suitable land. He has a good market for shipping fresh, as the pear arrives in good condition, probably the best shipper of all California fruits. He has a ready buyer in the canner and a good market for the dried article, if well handled. The tree is thrifty, hardy. Scab, scale and worms can be prevented with reasonable care, and if the blight has no terrors the grower located on suitable soil seems in a most favored position for years to come.

Plums.

Egg plums, green gages, golden drop plums and similar varieties are used to a limited extent for canning. Buyers object to the colored varieties, as they discolor the syrup. The fruit is merely stemmed, graded and washed and packed whole without peeling or pitting. About 2,500 tons are used for canning and the price is usually from $15 to $20 per ton.

The varieties mentioned constitute those of greater importance to the canner, although the small fruits and berries are used by him as well as by the maker of jams, jellies and preserves.

It should be remembered that while there may be a shortage on some of these fruits of minor importance, it might not require much to create a surplus, and a grower should consult the manufacturer before planting any of these varieties on a large scale.

Small Fruits.

California enjoys a fine position with Royal Ann cherries and Bartlett pears, apricots, yellow cling peaches and white clings. There is strong export demand and there are none better, if so good, but conditions are different with our berries and small fruits. We will have to admit it right here among ourselves that they are no better than those grown elsewhere and we are largely dependent upon local trade.

Blackberries have been produced in large quantities, chiefly in Sonoma county, and are used extensively by canners. The Mammoth and the Lawton varieties are most common. About 2,000 tons are used by canners and makers of preserves, the price has ranging about $40 per ton.

Far better results are secured from Loganberries, as they are growing in favor, bring better price from the fresh fruit market, from the canner and from the buyer of dried fruit. In its fresh form the price ranges from $55 to $75 per ton. Canners use about 750 tons. The Phenomenal variety seems to be preferred. In the drier form Loganberries are likely to supplant the Eastern dried raspberry. They sell for about 23c to 25c per pound.

Strawberries.

From the point of view of the canner and maker of high-class preserves, California needs strawberries and raspberries of firmer texture and higher color. The varieties commonly grown are comparatively soft and juicy, suitable for jams and jellies, but not for preserves. Such are the Dollar and Jessie varieties of the Florin district; the Banner and Malinda berries of the Watsonville district. The Longworth of the Alviso and Santa Clara districts has become too small to give satisfaction to the canner or consumer. These varieties ordinarily bring $60 to $70 per ton, while the Clarke, Wilson and other similar varieties grown in Oregon bring $100 per ton. They are apparently more hardy, more thrifty, better for shipping and for the table, as well as for canning. About 800 tons are used by canners and preservers, but a much larger quantity could be used of better varieties.

Similarly with raspberries—canners find better results from Oregon fruit because it is firmer and higher in color. The fresh market seems to yield a very profitable figure for all the raspberries grown, and for that reason there is little inducement for the grower to speculate with other varieties. The Cuthbert and Antwerp varieties are commonly grown; the former is preferred. Growers probaly receive 10c per pound or better from their shipments to the market. Canners use about 100 tons, but more would be used if prices were nearer the limits acceptable to growers in Oregon and Washington.

Gooseberries.

Gooseberries are used in a limited way for jams and jellies. Growers are paid from 3c to 5c per pound. If the larger English gooseberry, as grown in Oregon, were produced here, canners would be interested and could afford to pay a higher price. Formerly there was a larger demand for the canned gooseberry and canned

(Continued on Page 10).

Pumping Plant That More Than Paid

Fruit growing in the Santa Clara valley was founded on the dry farming basis, or farming by rainfall alone. Yet as one goes through the valley now there can be heard everywhere (provided there is water bearing strata below) the low buzz of motors and the sharp bark of the gas engines. Despite the excellent rainfall of the last season and the ideal weather of spring and summer, what wells there are are all kept busy. Irrigation pays in fruit growing, even where the rainfall was once considered all that was required, and a country requiring irrigation formerly despised.

One of the most delightful parts of the valley is the Berryessa district, northeast of San Jose. In this district wells are used on many ranches. When a fruit grower has not a well himself he very commonly buys water from a neighbor that has. Thus, small acreage or scarcity of capital, it does not matter much—a man can do without a well and still get water, or having a larger well than the ranch requires he can keep the plant occupied by supplying water to his neighbors.

Just what advantage there is in having the water is shown by the experience of A. M. Foster of Berryessa, who has a 17-acre orchard, mostly prunes.

Last year water was purchased from a neighbor. The price was $1 per hour for a stream of about 300 gallons per minute or less. Water was used for 430 hours during the season, the cost per acre thus being $25 and a few odd cents. This spring he installed an electric pumping plant, by the end of June had sold $200 worth of water, or more than enough to pay for interest, depreciation, sinking fund and expenses for the year, and had all the water required for the ranch. The water was sold at 90 cents an hour, or 10 cents less than he had previously paid for a stream of the same size.

An itemized statement of the cost of the plant is given herewith. It is fair to say, however, that everything was gotten at bedrock price and it is not likely that a similar plant could be put in for within $200 of the price, $853.91.

The well is 175 feet deep, with pit 30 feet deep. There is a 3-inch vertical centrifugal pump and 15 horsepower electric motor. Electricity is obtained on a sliding scale at a minimum charge of $90 per year. The bill will probably run over the minimum and be about $100 per year.

It cost $2.50 per foot, or $75, to dig the pit and for curbing same. Lumber for the pit cost $55.20, delivered six miles out in the country. This was 2 by 10 wet redwood. Included in this price is lumber for timbering up pit.

The motor and pump costs were lower than normally. A year before a neighbor started to install a pumping plant, and after he had it installed found that he did not have water enough for the pump, so Mr. Foster, intending to put in a plant of his own some time, purchased the pump and various accessories for $90, which was something of a bargain.

On arranging for the present plant the Bean Spray Pump Company, who provided pump and motor and all fittings, took this pump and the accessories as part payment, the contract price being much less than it otherwise would have been. Their bill was $364.15, which with the $90 originally expended made pump and motor, with accessories, cost $454.15. There were several small extras connected with this, amounting to $6.25.

The casing cost $112, 2 per cent discount being given for cash. Boring cost 65 cents a foot for the first 100 feet, 25 cents extra being charged per foot up to 50 feet, total cost $119.25.

Sawing (notching timbers for the pit at mill) cost $5.75. Lumber for the motor house cost $17.56. Material for foundation for motor cost $3.75, bringing the total to the amount first named.

The owner furnished team for hauling material, also hauled gravel and provided labor in building motor foundation. How much good in dollars and cents the water will do cannot be figured out as definitely as the saving in having the plan instead of buying water, but although the prune crop over the county generally is very short, on account of the good irrigation last year and good tillage there is quite a fair set of fruit on the trees, not a full crop, but a very fair one and sizes large and quality excellent. The trees likewise are in the best kind of condition, so the $430 paid last year looks like a fine investment. Naturally, if that paid, having the plant and getting the water free, which in effect is what is being done, is a still better investment.

A cover crop of barley was grown on part of the orchard last winter that was so heavy that it was difficult to plow it under. This could not have been done without irrigation water, or if done, it would have probably dried out the soil too much, as the part where the barley stood showed signs of requiring water earlier than the rest of the orchard this spring, and by having the water the trees were kept in fine shape. The barley apparently has been a fine thing for the soil.

Speaking of cover crops and more particularly organic matter for the soil, Mr. Foster as an experiment two years ago bought about 20 tons of pea straw and similar waste from Japanese raising vegetables for the cannery near by that otherwise would have been burned to get rid of it, stacked it, kept it moist and composted it in the regular way. The material made the finest kind of material for orchard and garden.

To digress again—about 75 Plymouth Rock hens are kept on the place, all the food except green stuff being purchased. These fowls are kept instead of Leghorns on account of their greater value as table fowls. The eggs are sold to a San Jose grocery for paper price (San Francisco quotation), although the usual price for most farmers in most groceries is a cent or so below quotation. In the two years they have been thus sold not one egg has been candled out, which is the reason for the fair price.

Much of the income from the poultry yard comes from the sale of the fowls themselves, net returns averaging $15 per month. Like the orchard, these returns are the result of good care and attention.

An Ivy Covering for the Mail Box.

A Touch of Nature in the Mail Box.

Making the Mail Box Attractive

By Albert Marple, Tropico, Cal.

Just a word on the subject of the mail box for the farm home. While not one of the most important questions on the farm it is one which should be given a little careful consideration. It is too often the case of "anything will do" when the question of the mail receiver is being considered. In many instances a common wooden box is placed on a rough wooden post and the result is anything but beautiful. It may be truthfully stated that the owner of the home may be judged by his mail box. As a usual thing the mail box is located at the front of the home, many, however, being placed at the front gate, where it may be seen by anyone who may pass by. This being the case the rough wooden box would prove anything but attractive.

In the case of the pretty country home that is located comparatively close to the roadway the writer would suggest something like the rustic box seen in one of the accompanying illustrations. This box is made of a log in as nearly the same condition as it was when cut from the trees. Great care was used in making this box, as one of its principal features was the retaining of its bark in its natural condition. In the building of this box a log four feet long was selected. From the upper end of this piece of wood a diagonal cut was made, this extending about one-third the way down the log. A second cut was started about five inches below the lowest point of the first cut and this was continued parallel with the first cut about two-thirds the way through the piece, at which point a counter cut was made, severing the slice of wood, which was to afterward serve the purpose of the lid. The inside of the log was then hollowed out, the hole being made large enough to contain any mail that might be dropped within it. The attention was then turned to the lid, through which a hole was cut sufficiently large to permit the insertion of ordinary mail. The lid was then placed in its original position, where its upper end was hinged so as to make it swingable. With the insertion of a bark-covered peg in the bark section of the lid to serve as a handle the box was completed. The only expense incurred was the price of the hinges, which was 10 or 15 cents, and the finished box was worth dollars.

For the beautifying of the ordinary "rural" mail box a valuable idea is seen in the other illustration. Before being beautified this box was just as unsightly as any ordinary sheet-iron mail box which is placed on a common rough post. There was nothing attractive about it. Tired of seeing its bare condition the owner planted four ivy vines at its base, one at each corner. As the days passed these plants were given a little attention, in response to which they grew rapidly and in the course of a few months had climbed up the post and over the top of the box. At the time this photograph was taken the growth of foliage had become quite dense and both post and box were hidden with the exception of the opening of the box through which the mail was inserted and taken out. This farmer felt very well repaid for his trouble. The expense of turning this unattractive mail receiver into a really beautiful feature consisted of four small ivy slips, which, by the way, were donated, and a little care and attention.

WALNUT ESTIMATES.

The California Walnut Growers Association in a statement issued early in July estimated the crop at about 10,529 tons. The crop is a little below average in acre production, but the increased acreage may make the total yield come about up to that ordinary years. Conditions for the nuts that have set have been so favorable that the nuts bid fair to be 2[illegible] per cent larger than those of last year. The promise is for only about six per cent of No. 2's, as compared with 28 per cent of a year ago.

Market prospects are excellent as the carry over is practically cleaned up and the harvest will be early. Prices will be good, but fair enough to the trade to permit the nuts to move readily. There is a tendency among growers to be moderate in prices asked dealers.

Two new local associations have joined the central association, which now has 18 locals marketing nuts through it. A big reduction in rate to eastern seaboard cities has been obtained for Panama Canal shipments, freight from Los Angeles being [illegible] cents per 100 pounds, a further reduction being expected also.

A LITTLE TAFFY.

I want to tell you how much I enjoy reading your paper and I hope to be one of your subscribers all the time. I highly recommend it to everybody. — WILLIAM NELSON, JR., Santa Maria.

Do not know how you can afford to put out such a splendid farm magazine for but 50 cents per year, especially with the splendid service, inviting any questions and answering them.—H. KNIGHT, Sutter, Cal.

Activities of California County Farm Bureaus

By Prof. B. H. Crocheron

(The greatest feature of agricultural education in the past year or two is the wonderful advance in university extension work, or agricultural work of the universities among others than students. This work bids fair to be many times as important in the near future as at present, and the County Farm Bureau is one of the agencies by which this progress will be made. The outline of Farm Bureau activities given herewith is taken from a University of California circular just issued. Any person wishing more details should certainly write to the University at Berkeley for this circular, No. 118. —The Editor.)

A farm bureau is an organization of farmers and ranchers who combine to promote agriculture through co-operative study of farm conditions.

For many years there have been farmers' clubs, granges, institutes, unions and alliances. These have been more or less successful, but many have passed away, perhaps from lack of usefulness. Some of these organizations have not had a definite purpose and have therefore failed to find a permanent place in rural affairs.

The farm bureau is distinct from all of these. It is not primarily a social organization; neither is it essentially to unite farmers so as to lower prices of stuffs bought and to raise prices of products sold. But it is formed to bring together for mutual co-operation those farmers who want to investigate the fundamental problems that are involved in production on their farms.

Every State and Territory has at least one "experiment farm," supported by Federal and State funds. These have ben exceedingly valuable because the results therefrom were noted by men whose business and interest it was to observe. The acreages of these farms were small, their crops were often meager—and yet they have been worth millions beyond their cost because the records of productions and the conditions under which they were grown were known and noted.

Many of our farm problems are already solved on the farms of the nation. Individuals have found the solution of vexing questions that are agitating the experiment stations and agricultural colleges. But these solutions usually fall out of sight unnoted or are known only to the man on whose farm they occur. If these unknown and unnoted experiments could be gathered they would at once add much to our view of agriculture.

In America there are on the average more than 100,000 farms to each "experiment farm." Obviously, if the results on some small percentage of these could be viewed from the same standpoint as at the experiment farm, the benefits would enormously outnumber the records achieved by the experiment stations. If is, of course, impossible to gather all this material or to note all the changing conditions on farms. But it may be possible to gather together in one county organization the wide-awake and interested farmers who will compare their results with those of others and, in a more or less scientific way, plan out experiments and demonstrations on their own farms. Such is a farm bureau.

Fundamentally, then, a farm bureau for the county can be collectively a sort of giant experiment station, with several hundreds observers, who hold a monthly caucus to compare results.

The farm bureau has a trained man to aid it—the farm adviser. It is his business to help interpret results, to point out new lines of work and to deduce conclusions from the evidence at hand. The farm bureau can be of greater value to the county than the farm adviser. Together, they can be of more benefit than either alone.

Other activities may concern the farm bureau besides local research into agricultural problems.

The farm bureau may be a sort of rural chamber of commerce and thus be the guardian of rural affairs. It can take the lead in agitation for goods roads, for better schools and for cheaper methods of buying and selling. Perhaps, most of all, it can help promote the social institutions of country life. Some rural neighbors are so starved for recreational meetings that they will come out to anything, from a patent medicine show to a school meetings. The farm bureau can help put more recreation into rural life. Every country neighborhood ought to have some social gathering at least once a week. It is almost as much needed as the spiritual congregations at the church, or the educational assemblages of the children at the school house.

But very surely and insistently, the farm bureau is not first and foremost of these—good and desirable as they may be. Perhaps, the farm bureau can help to buy cheaper and better seeds, can help to boost the local socials, can encourage the faltering school teacher, can get out and talk for good roads—but its first and surest function is to increase the local knowledge of agricultural facts.

The General Plan.

The membership of the farm bureau is composed of those persons in the county interested in agriculture who desire to promote its prosperity throughout the formation of a county organization to which they pay a dollar a year each. Usually a successful county farm bureau should have at least one-fifth of the farmers in its membership.

The whole membership of the farm bureau meets together but once a year at its annual meeting in the fall. At that time the general officers are elected—president, vice-president and four directors at large.

For pratical purposes, the county organization is divided, along geographical lines, into ten or twelve centers. Each center that has ten or more members elects a director as leader. He acts as chairman of the meetings and represents the center on the board of the farm bureau.

Thus, if there are ten centers in the county, there ultimately may be fourteen directors on the board—four at large and one from each center.

The directors usually hold a meeting once a month, when reports are heard from the various centers and the general plans for the movement in the county are considered.

The officers elect a secretary-treasurer who holds the funds and keeps the records of the farm bureau.

The farm bureau is financed by dues of a dollar a year, which its members pay into the organization. The expenses of the bureau are those of hiring offices, the carrying on of correspondence, printing of pamphlets, etc. Sometimes, but not usually, the farm bureau pays the expenses of the directors who come to the board meetings once a month.

The annual meeting—at which the election of officers takes place — is held in the fall, usually at the county seat. It should be so arranged as to make it a matter of considerable local interest and importance—it may be an all-day gathering, to which speakers of note are invited; it may sometimes take the form of a large public banquet or of a country picnic. The main effort is to have present a large proportion of the membership of the entire farm bureau, in order that the officers elected may be adequately representative and that once a year the organization may realize its strength and its large membership.

The directors of the farm bureau meet every month—usually on a Saturday—at the farm bureau offices or at the farm adviser's offices. These meetings should be of such vital interest that the entire board of directors will be present. At these meetings the policy of the farm bureau should be determined, committees appointed, reports heard from each of the directors representing a farm bureau center, and a general consideration given to the plans of the farm adviser. The meetings may or may not be open to the public. In some cases, it has been thought wise to have the directors, at the conclusion of the morning meeting, lunch together at a local hotel or restaurant in order that there may be some social phase to the day's proceedings.

Monthly Local Meetings.

The farm adviser, by appointment, may be present one day every month in each center of the farm bureau. Thus, if there are ten or twelve centers, he will have ten or twelve definite appointments each month for his local work. His usual method is to come at once to the home or office of the local director and to learn from him those who desire to have the farm adviser come to their farms on that day. He then spends his entire day going about the neighborhood seeing those who desire his services. The farm adviser never goes to any except those who so request. He never sets his foot on the land of a man who does not want him.

Usually the farm bureau center has its meeting the night when the farm adviser is there. These meetings may be open to the public, but should be serious discussions of questions pertinent to the farm prosperity of the neighborhood. To this end, it is proposed that some of the local meetings of the farm bureau centers be devoted entirely to a study of some one phase of agricultural practice. If lime is a pertinent question for the neighborhood, why not have the farm adviser explain in detail all the forms of commercial lime, using a blackboard if necessary to make it all clear. The members might bring notebooks and write down such points as they cannot remember. Other subjects, such as "sprays and spraying," "balanced rations" and "methods of testing seeds," might well occupy one or several meetings in order to cover them in such a way that all can gain a true comprehension of the subject. It will take real old-fashioned study to do it. But that is the function of the farm bureau.

In order to further promote an understanding of some of the methods advanced by the farm adviser, it may be desirable to have demonstrations of these located on scattered farms throughout the county. Usually these demonstrations are placed with the most interested and active members of the farm bureau.

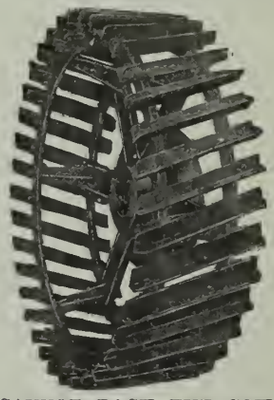
If, say, the farm adviser desires to locate fifty demonstrations through the county, he may ask each of the directors representing a center to nominate five members with whom demonstrations may be placed. These members agree to undertake the management of one piece of land, section of orchard, or group of animals, as directed by the farm adviser, in order to demonstrate some fact of agricultural importance to the neighborhood.

Trees planted for ornamental purposes should hide whatever is unattractive but leave whatever is beautiful open to view.

Many a man who calls himself the architect of his own fortune carried out all the plans with dad's money.

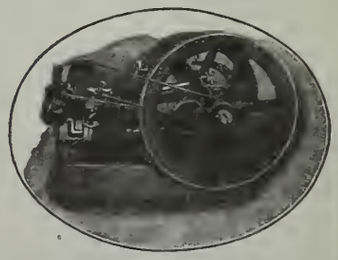
SAMSON
SIEVE-GRIP
TRACTOR
30 HORSEPOWER ENGINE

DUST PROOF
SIEVE-GRIP WHEEL
Registered and Patented in U. S. A. and Foreign Countries.

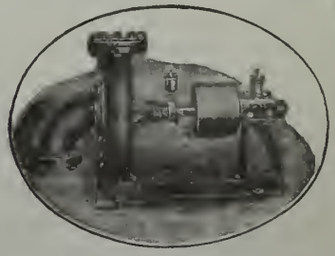


CANNOT PACK THE SOIL
You Want to Plow, Cultivate Harrow or Haul
More Cheaply and Better Than With Horses
Write for Catalogue O. A.

SAMSON
STATIONERY ENGINES
2-200 HORSEPOWER



18 YEARS' REPUTATION
Over 6,000 Satisfied Customers
SAMSON CENTRIFUGAL PUMPS
30-50,000 Gals. Per Minute.



Catalogue on Stationary Engines and Pumps—Catalogue O. B.

A ONE-CENT POSTAL TO
SAMSON IRON WORKS
1106 AURORA ST.,
STOCKTON, CALIFORNIA

Will Bring You Catalogue or Information You Want

Crop Conditions All Over California

Reported by the County Horticultural Commissioners.

ALAMEDA, Fred Seulberger—The apricot crop is about harvested (July 22). We had about an 80 per cent crop. The trees that were sprayed last fall had excellent fruit and on most of the unsprayed trees the fruit was more or less covered with smut. The pear crop will be light in some parts of the county—about a 50 per cent crop—and in other portions of the county there will be about an 80 per cent crop. Plums will make a 40 per cent crop.

FRESNO, Fred P. Roullard—Deciduous fruits are making a normal crop. Green peaches are being shipped and growers are preparing to cut their dried fruit. Navels are showing up in good shape. Valencias have dropped considerably on account of climatical conditions. Grapes are making close to a normal crop. We had a slight sunburn two weeks ago, which will reduce the size of an abnormally large crop.

KINGS, B. V. Sharp—We are harvesting the heaviest crop of deciduous fruits obtained for years. Prospects are for a 90 per cent of normal crop of grapes of various kinds. Grain is yielding very heavily. Livestock is in good condition, as feed is plentiful.

LOS ANGELES, Wm. Wood—Deciduous fruits are producing heavily and we have no complaints except for a little scale. Prices are about an average. Citrus fruits are making an average set and conditions are good so far. Black scale is worse than usual. Prices are rather low. Berries and field crops are yielding well. Both the acreage and yield of grain is larger than the average, but prices are lower than last year. Livestock is in fine condition and prices are high.

The Horticultural Commissioner's office is very busy watching horticultural shipments, preparing for treatment of scale the coming season, and making preliminary preparations for the State Fruit Growers' Convention, to be held in Los Angeles the second week in November next. It is proposed to make this one of the largest and best conventions ever held in the State, and as the programme includes, besides the usual features, the subjects planned for the fall convention of the Riverside University Experiment Station and a fine women's programme, we fully expect our hope to be fulfilled.

MONTEREY, J. B. Hickman—Barley, grain hay and alfalfa total a very heavy yield. The berry harvest is about over, except where the berries are irrigated. The yield has been good. Grapes have set well, but will be late. Deciduous fruits promise, or yielded, as follows: Almonds, 50 per cent of a full crop; apples, 60 per cents; cots, 100 per cent; berries, 90 per cent; cherries, 20 per cent; grapes, 80 per cent; peaches, 60 per cent; pears, 75 per cent; plums, 35 per cent; prunes, 50 per cent.

NAPA, A. D. Butler—Deciduous fruits have been and are pretty light here with the exception of peaches and apples. Apricots turned out better than was expected. Grapes promise a good crop. Berries and vegetables are in good condition. Grain is very good and there is an abundance of hay. Livestock has done exceedingly well.

NEVADA, D. F. Norton—Nevada county has a phenomenal fruit crop this year, both in quantity and quality. I have never seen cleaner fruit. Pears are exceptionally fine, 95 per cent free from scab and worms. Shipping will commence about the first of August. The Hungarian prune crop is below the average, but the size and excellence of the fruit will give the grower about as much as would an average crop. The Nevada county cannery is running to its full capacity on peaches, plums and beans. They will commence canning pears the first of August. The cannery association has 100 acres of pears under contract for ten years at $40 per ton. Their equipment is first class and up to date in every particular. The horticultural outlook for Nevada county is very encouraging. Over 1,000 acres was planted to fruit and nuts last season and next season's planting promises to be much larger.

Since it has been practically demonstrated that the soil and climate of Nevada county is particularly adapted to nut culture, land is being prepared for large plantings this season. While the largest plantings are walnuts, principally Mayette and Franquette varieties, a great deal of attention has been given to chestnuts the last year. The Mountain Fruit Company has made the largest individual planting. The varieties planted were the Rochester and American Sweet. Filberts have proved to be a paying crop here and the Barren Hill Nursery has gone into the propagation of the trees quite extensively.

SACRAMENTO, Howard G. Kercheval—There has been no change in deciduous fruits since last report. An average of 30 cars per day is being shipped from the Sacramento river delta. Oranges are of fine size and the trees heavily loaded and present indications are that the crop will exceed that of last year, which was 300 cars. The olive crop will also exceed that of all previous years.

There is a very heavy crop of all varieties of grapes this season, probably the heaviest ever harvested in this county. Owing, probably, to the abundant supply of moisture during the past winter, the English walnuts along the roadsides and elsewhere all over the county, have an extra heavy crop of nuts, which shows the excellent opportunities for this industry, where plenty of moisture is available.

SANTA BARBARA, C. W. Beers—Apricots have proved a record crop and the dried product is of a high order. The quality is first class. Peaches are fairly good. They are disappointing in size, but of fairly good quality. There is no change in previous forecast as to the walnut crop. The new bearing acreage of citrus fruits will augment last season's output and the setting of the lemons is very satisfactory to the growers. Pests are not especially serious, being held in control by ordinary means.

The grain crops came out quite up to average production. There is an excessive acreage of beans with every prospect of a full crop. Potatoes and onions are of excellent quality and full crop average, with a strong demand for same. Livestock was sold down last year, leaving the county short on range cattle. Pasturage is excellent and the stock on ranges is in fine condition at this writing with an abundance of feed. A keener interest is being awakened to intensive farming methods and the general conditions throughout the county are prosperous.

SAN DIEGO, H. A. Weinland—The apricot crop was fair. Peaches will be about 60 per cent of a crop and apples 75 per cent. The most striking fact regarding citrus fruit is that much bloom on those trees which were the worst frozen in 1912 is not holding, as the wood is not sufficiently mature. The grape crop will be large, according to all indications.

SHASTA, Geo. A. Lamiman—All early peaches sold for good prices in the northern market, and fruit is still bringing good prices owing to good quality. Cutting fruit is now in full swing. Peaches are rather small and trees are overloaded. The pears will soon be ready for harvesting. Some codling moth are showing now. The late rains cracked some of the prunes but will not materially affect the crop, which will run to large sizes. All grapes are well loaded and doing well. All berry crops are harvested and a good second crop of strawberries is now in the maretk. The grain harvest is about over and threshing is now under way.

At the election held early in the month it was voted to form an irrigation district by an almost unanimous vote. The work will be pushed along to a finish as fast as possible.

RIVERSIDE, Dan D. Sharp—Apricots, almonds and peaches will be about 90 per cent of normal; walnuts, 100 per cent; olives, less than 50 per cent; prunes, 50 per cent; aples are very promising. The lemon crop looks fine and is very promising for a full crop. The orange crop is very uncertain on account of the uneven bloom and set. We will have less than 75 per cent of normal. Grapes are quite promising; a great quantity of the first crop was hurt by hot winds, but a second crop set well.. Livestock is in demand for dairying purposes, but scarce. Those who have them have too good a thing to part with.

STANISLAUS, A. L. Rutherford—Berries, cherries, apricots and plums are harvested. Peaches, with few exceptions, are making a full crop. As a whole they will make a 90 per cent crop. Grapes are only 90 per cent of a full crop or less, on account of mildew. Melons are suffering somewhat from wilt, sweet potatoes from a shortage of water. Beans, corn and cantaloupes are fine. Livestock in general is in good condition and has a surplus of feed. Alfalfa and sweet potatoes are suffering for water in parts of the county, due to a break in the irrigation canal. In other parts of the county these crops are doing extremely well this month.

TULARE, Charles F. Collins—Peaches are being harvested and are a very heavy crop. Prunes promise well, probably 90 per cent. Many orchards are heavy with fruit. Figs are a full crop and grapes probably an average, though there is some sunburn. Citrus fruits do not promise as well as a month ago. Navels will probably give a 90 per cent crop, Valencias 50 per cent or less.

Sugar beets are looking fine and the harvest is now on. Grain is mostly harvested and was a good crop, the heaviest in years. Livestock looks well and feed is plentiful. The prices of hay and peaches are below par. Other fruits and livestock are aeroplaning. The weather is warm or warmer and the humidity high.

VENTURA, R. S. Vail—Apricot harvesting is completed and there is an estimated production of 2,250 tons of dried fruit. Walnuts are estimated an 80 per cent crop. There is very little aphis, but the blight is rather severe. The Oxnard beet sugar factory will open about the middle of August and will run full capacity at once. The bean prospects are excellent. The number of trees planted in Ventura county in the season of 1913-14 follow: Apricots, 94,605; lemons 93,027; oranges, 32,089; walnuts, 12,699; miscellaneous deciduous trees 20,000.

YUBA, Geo. W. Harney—Pears plums and peaches are turning ou better than early estimates indicated A full normal crop of grapes will b harvested. Citrus fruits are in goo condition, as are grapes, berries an vegetables. Prices for fruit have a upward tendency. From $25 to $4 per ton is being paid for early apple $35 to $40 per ton for early peache for shipping and $25 to $35 for earl tomatoes for shipping.

The man who keeps high-class dra mares to perform his farm work can not afford to put them into the hand of an incompetent hired man.

Cannery Demands for Different Fruits

(Continued from Page 7).

currant, but there was considerable spoilage, due to the fact that growers were using dry sulphur to prevent mildew and using it after the fruit had formed. This sulphur attacks the steel of the tin plate and soon destroys the hermetic seal, creating a swell.

Because of the high price, currants are used commercially for jelly, but to no great extent for canning or for jams. They bring from 4c to 6c per pound.

Minor Fruits.

Calimyrna and White Endich figs are used to some extent, and if handled carefully the small size would bring from 4c to 5c per pound from the canner and preserve manufacturer. It seems difficult to have them picked and delivered in proper condition. If they are too green they are of little use and if at all overripe they cannot be used for a high-class preserve or canned article, but merely for a cheaper grade of jam. Texas seems to be able to grow a small white fig of good quality and this is canned to a considerable extent. There would seem to be an opportunity for development in California.

Damson plums are needed for preserves, jams and jellies. They bring $35 and $40 per ton when the ordinary varieties, like Gages and Egg plums, are selling for $15. There are very few grown at the present time.

Concord grapes are also needed for jams and jellies. The want is partially filled by the Isabella variety. Jam makers can afford to pay a premium for the Concord above the ordinary varieties obtainable.

Quinces, which were for years a drug on the fall fruit market, are now in better demand and now command a reasonable price of $25 to $30 per ton.

Crabapples are in short supply, commanding a price of 4½c to 5c per pound.

Sour cherries are also used in a limited way, but there is small encouragement for the grower to plant them, as he can get better prices for the table and shipping varieties. The canner is limited in his price by Eastern competition.

This is primarily a gathering of fruit growers and many would be uninterested in any discussion of vegetables used in canning, but it is not too much to say that if a variety of tender sugar corn, free from worms, could be grown, it would lead to a tremendous growth in the canning industry, of importance to land owners, farmers, canners, dealers and consumers. Various experiments have been made, but the waste and expense arising from the worm make the canning unprofitable.

There is a need of a smooth, firm, red, hardy, thrifty tomato. On account of the irregular shape of the variety now largely grown, there is great waste in peeling.

Evaporation of Loganberries

This spring a correspondent asked regarding the possibilities of evaporating berries and the market for the same, and we were unable to answer the question very fully. The Oregon Agricultural College at Corvallis, Oregon, has just issued a bulletin on Loganberry By-Products which goes into this subject in detail. Apparently there is an excellent market for dried Loganberries and it would not be surprising if it were found very profitable to grow these on a quite extensive scale in hilly regions where berries naturally would do exceptionally well, but the shipment of fresh fruit would be unprofitable owing to transportation difficulties. In such conditions also fuel for running an evaporator would be cheap.

Persons wishing to investigate the matter thoroughly, also the possibilities of making Loganberry juice, should get the bulletin, which is quoted only in small part in the following:

In considering the question of evaporation of the Loganberry, we can divide the subject into two natural heads. First, that which deals with the harvesting and preparation of the berries for evaporation. Second, that which deals with the handling of the berries in the evaporator. We wish first to take up the work in the field, namely, the harvesting and preparation.

Harvesting and Preparation.

An investigation will show that many of the inferior evaporated Loganberries are due to one or all of three causes: poor selection of the fruit and careless harvesting methods; rough handling in removing the fruit from the field to the evaporator; and unskillful methods employed in evaporation.

Too much stress cannot be placed on the question of harvesting. Early in our investigations we soon determined that harvesting alone was responsible for many of the poor berries that were being evaporated. It is only by very careful handling and correct knowledge of the proper berries to pick, that one can deliver to the evaporator a product that is desirable for evaporating. In addition to careless handling in the field, many berries are ruined in being transported from the field to the evaporator.

Types of Berries Desired.

The best berries to select for evaporating purposes are firm, ripe berries. Care should be taken, however, not to pick these too soon. If they are light colored, or very bright colored and hard, they do not make a very satisfactory product. True, a very pretty product can be manufactured, one which is very attractive, but the fruit is too tart, and it also loses too much weight. During the early part of the season, growers need to be unusually cautious not to pick the berries too green. The berries are apt to ripen slowly, while a grower has a tendency to become anxious to remove the fruit and to start the evaporator. The presence of large amounts of this unripe fruit is probably partly responsible for the greater loss in weight through the evaporation process during the early part of the season than is experienced during the latter part; though possibly the fact that there is apt to be a little less moisture in the ground at the end of the season, may be responsible for some of the difference in moisture content of the fruit. Berries which are over-ripe should not be used for evaporating purposes. Such berries can be utilized for juices, syrups, jams and jells.

Evaporation.

The evaporation of Loganberries is in its infancy. Two of the men who were among the pioneers in the evaporation of the Loganberry were W. H. Claypool of Salem, who used a stack evaporator, and E. W. Powers, also of Salem, who used a tunnel evaporator. These men both started work in 1908, at a time when the production of the fresh berries had reached a point where the market was becoming overstocked. Canning, up to that time, had not been successful commercially, owing to the fact that plain tin rather than enameled cans had been employed, whereas the latter are necessary with this fruit. Evaporating and juice manufacture had not been tried. This, coupled with the poor shipping quality of the berries, made it necessary to sell all of the fresh fruit in the local market. It was very easy, in the face of such a handicap, to overstock the market. Most of the growers at that time became discouraged and ripped out their berries, much to their regret in later years. The following years the prices were so satisfactory that the Loganberry has been one of the most profitable crops we have grown in the State.

E. W. Powers shipped the first evaporated Loganberries from the State. These were sold in Aberdeen, South Dakota, for 22½ cents per pounds. For the first few years nearly all the evaporated berries were sold in the North Central States, one car being sold for $12,148, a price thought by some to be the highest ever received for a car of fruit from the Pacific Coast. During the past season large shipments of evaporated berries were made to Chicago and other Eastern markets. These sold on an average for 23½ cents per pound f. o. b. The demand for evaporated Loganberries became so great this past year that for the first time the buyers came to the associations, and even to the growers, endeavoring to secure enough berries to fill their orders.

Prune evaporators are commonly used for the evaporation of the Loganberry. Both tunnel and stack types have been used, but at the present time most of the men who have used both types prefer the tunnel.

Methods of Evaporation.

Loganberries should be spread on the trays evenly and rapidly, with a quick twist of the wrist. They should not be moved when once on the tray, and any attempt to pick out stems, flower parts and broken leaves at this time will result in the fruit becoming more or less crushed. If the trays are filled too full, or the berries spread unevenly, some will dry quickly, while others which are more deeply piled become mushy and dry slowly. Fourteen boxes, or about 16 pounds, are sufficient for an ordinary tray. One man should be able to fill from 150 to 200 trays per day.

The best results are obtained when the temperature at the beginning of evaporating is kept at about 130 degrees F., with a strong draft. In order to obtain such conditions, the tunnels will need to be shortened, or some system employed to force the air through the tunnels at a more rapid rate. The temperature at the finish need not be higher than 150 degrees F., and with a strong draft even less, although the berries will stand a much greater heat. The maintenance of a fairly high temperature at the start and a strong draft through the tunnels, are two important factors in the production of good evaporated Loganberries; and, in addition, these two factors will shorten the time of drying very materially.

The berries should be removed from the trays before they become cool, as otherwise they will stick to the trays. The berries should be left

(Continued on Page Twenty-Six)

Power First—and Last

A ton of alfalfa ground into meal with 2 HORSE-POWER by the WILLIAMS 30-TON ALFALFA MILL and the RUMELY 30-60 H. P. OILPULL TRACTOR.

The WILLIAMS Mill does big work. It pulverizes alfalfa into finer meal than any other mill. It takes steady, continuous power to operate. The OILPULL is the ideal tractor to supply this power.

The WILLIAMS Mill is portable. The OILPULL moves it from job to job at a speed of three miles per hour. The Mill requires 70 belt horsepower to operate at the high speed necessary for grinding alfalfa. The OILPULL turns the Mill at a speed of 1,820 revolutions per minute, with a motor speed of 355 revolutions per minute.

Messrs. St. Clair and Reinking have been in the alfalfa meal business for years. They have tried every type of portable power, steam engines, gasoline burning tractors and electric motors. Read their letter telling how they have finally solved the problem of efficient and economical production with the WILLIAMS PORTABLE ALFALFA MILL and the RUMELY OILPULL TRACTOR.

The St. Clair-Reinking Outfit in Operation Near Salida, Cal.

Rumely Products Co., Inc.
Gentlemen:

The accompanying picture shows a 30-60 Oil Pull Tractor operating a 30-ton Williams alfalfa mill at full capacity. When taken, the mill was grinding at the rate of one sack per minute and no variation could be noted when the packer, which requires 8 H. P. to operate, is turned on and off.

We have been operating at the rate of about three tons per hour for 12-hour day and the Oil Pull furnishes ample power to pull the mill to rated capacity under all conditions. We have tried other Gas Tractors and steam engines and they have all failed to pull this mill successfully on account of the variable load.

The speed tester shows 1,820 revolutions per minute on the mill with the motor running at 355 revolutions per minute under all the varying loads to which the mill is subjected. This constant speed is necessary for the successful operation of the alfalfa mill and we are convinced by personal experience that the Oil Pull is the only power that fulfills this extreme requirement.

We are more than satisfied with this outfit—the Rumely Oil Pull 30-60 H. P. Tractor and the Williams alfalfa mill. It is absolutely the best possible combination for the grinding of alfalfa.

Yours very truly,
(Signed) Attest. M. L. St. Clair. H. M. REINKING.

The Williams Patent Portable Alfalfa Mill With Sacker

BUILT HEAVY, STRONG, DURABLE, and FOOL PROOF

BUILT IN FOUR SIZES.
¾ to 1 Ton per Hour.
1 to 1½ Tons per Hour.
2 to 2½ Tons per Hour.
3 to 4 Tons per Hour.

ADVANTAGES IN SHIPPING.
Sacks 100 lbs. in 29x41 Bag, 20 sacks to Ton
500 cu. ft. holds 1 Ton Loose Hay.
225 cu. ft. holds 1 Ton Baled Hay.
100 cu. ft. holds 1 Ton Meal Hay.
Saving of 400 per cent in storage—Meal ships at grain rates—cheaper than baled hay.
Meal 15 to 20 tons per car. Baled hay, avg., 10, saving freight rates.

POWER REQUIRED is approximately 10 to 15 h. p. per ton. Power varies with condition of hay.

MACHINES ABSOLUTELY GUARANTEED. PRICES AND TERMS LIBERAL.
Special inducements to first purchasers in each county where there are no machines at present. We are booking orders now for 3 months delivery. Arrange now to make the most of this year's crop. Write, wire or long distance phone for bulletins and personal call.

OLIVER J. WILLIAMS
266 Market Street **San Francisco**

The Rumely Oilpull Tractor 30-60 Horse Power

BUILT FOR HEAVY DUTY BELT WORK.

When you install a power plant on your farm you do not buy an engine with the pulley placed on a gear driven side shaft. The Tractor is a portable power plant. No more do you buy a tractor which supplies belt power through intermediate gears. It must maintain the same efficiency as the stationary engine. It must drive direct.

THE OILPULL DRIVES DIRECT.

The OILPULL drives your machinery direct from the crank shaft of the motor, placing every ounce of its rated horsepower on the belt pulley.

THE OILPULL IS UNIQUE.

The OILPULL burns 32 degree oil—lowest cost of operation.
The OILPULL is cooled by oil—no evaporation trouble.
The OILPULL the simplest tractor made—lowest cost of upkeep.
For further particulars address

RUMELY PRODUCTS CO. Inc.
75 Fremont Street **San Francisco, Cal.**

A Comparison of Cover Crops for Citrus Groves

By W. M. Mertz, Riverside Citrus Experiment Station

The question of fertilizer is undoubtedly one of the most important issues now before the citrus grower. Were you to walk through the plats constituting the fertilizer experiment at the Citrus Experiment Station you would note that wherever nitrogen had been used there was increased growth, better color and heavier yields. This holds true whether the nitrogen had been added through the medium of dried blood, nitrate of soda or stable manure, with the best results following the use of the organic sources.

Dried blood is a product which is produced in very limited quantities and could not be had in anything like sufficient amounts if all desired to use it. Again, it is very expensive and thus its use is becoming almost prohibitive to many growers.

Stable manure is also produced in limited quantities. At best, only a portion of the growers will ever be able to use it exclusively as a source of nitrogen. Nitrate of soda is at present the cheapest source of nitrogen, but seems to have factors which make it less desirable than an organic source of nitrogen.

It would seem, then, that a nitrogen fertilizer from an organic source, inexhaustible in supply and reasonable in cost, is practically a necessity to permanent success in the citrus industry.

The realization of the importance of nitrogen as a constituent of citrus fertilizers, together with the need of increasing the organic content of the soil, led the University of California to inaugurate an experiment at Riverside to determine the value of legumes as winter green manure crops.

This work was begun in 1909 and the results tabulated in this paper cover the work of the last four years.

Methods.

The experiment consists of two divisions. In the first part are grown various legumes, such as vetch, peas and clover, in tenth-acre plats, with check plats on which a non-legume, such as barley or rye, is grown. One check plat lies next to each legume plat.

We are now growing nine different varieties, so the experiment consists of nine legume plats and eight of the non-legume plats as checks. The seeds of these legumes are all sown during the early part of September and are treated in a uniform manner throughout the winter.

The nine legumes used are as follows: Common vetch, purple vetch, bitter vetch (Vicia ervilia), burr clover, Melilotus clover, Canadian field peas, Tangier peas, lentils and Fenugreek.

The non-legumes used in the different years have been barley, alfilaria and rye.

At the ordinary time for plowing under such green manure crops in citrus orchards we measure off squares twenty by twenty feet in each of the plats and determine the actual weight of green tops produced on that area. From this we can easily compute the tonnage of green tops these various legumes have produced per acre.

The tops from these squares are then spread out over the area cut and a fertilizer is uniformly applied over the entire area occupied by this experiment. This fertilizer consists of 540 pounds of finely ground raw phosphate rock and 320 pounds of sulphate of potash to the acre, no nitrogen being added.

Plowing then takes place with a fourteen-inch moleboard plow, turning the furrow slice well over and running nine to ten inches deep. The soil is then worked down with the disk and acme harrows ready for the planting of the summer vegetable crops.

Now follows the second part of the experiment from which we get the results of the nitrogen added by the various legumes.

Vegetables, such as corn, potatoes or sorghum, are planted in plats running the opposite direction from those previously occupied by the cover crops. Thus each cover crop plat has growing upon it during the summer the same sized plat of each vegetable used. During the growth of these vegetables nitrate of soda in amounts varying from 270 pounds to 1,080 per acre is applied in three applications to every second non-legume plat. Uniform cultivations and irrigations are given all plats.

Upon the maturity of the vegetable crops accurate determinations are made of the number of plants per plat and the total yield of each plat in pounds and ounces.

From these figures we get the yields in pounds per acre of each of the 17 plats and can easily compute the increases resulting from the various treatments of the soil.

Yield of Cover Crops.

The following are the average annual yields in tons per acre of green tops produced by the various legumes and barley in their order. These averages cover the work of five years with these exceptions, the averages of Melilotus clover and the vetch, Vicia ervilia cover but the last four years' work, while the purple vetch was grown for the first time this past winter.

	Tons.
Purple vetch	18 1-4
Tangier peas	14
Melilotus clover	12 3-4
Fenugreek	12 1-3
Lentils	12
Common vetch	12
Burr clover	12
Barley and rye	12
Bitter vetch	11 1-2
Canadian field peas	9

The total cost of growing these legumes, including cost of seed, cost of sowing and two extra irrigations, average about $8 per acre. This expense is practically covered by the saving due to the cessation of cultivation for the period of five to six months that the land is occupied by the cover crop. Thus, we arrive at the time for plowing in early March without having gone to any additional expense in handling the orchard and have grown on the land a large amount of valuable organic material.

Yield of Crops Following.

The following chart gives the average annual yields of three of the seven vegetable crops grown on land on which was plowed under the cove crops named. The yield on plats on which was grown legumes is compared with yield on plats where barley was grown as a cover crop, fertilized and unfertilized:

	4-year Aver. Shelled Corn in bu. per A.	2-year Aver. Yield Potat's. in bu. per A.	2-year Aver. Yield Beets in tons per A.
Common vetch	35	171	15.3
Barley, plus 810 lbs. nitrate of soda	34	191	16.0
Burr clover	35	228	17.3
Barley	29	152	13.4
Barley, plus 270 lbs. nitrate of soda	32	166	12.5
Bitter vetch	38	231	16.7
Barley	27	166	10.7
Canadian field peas	40	243	17.6
Barley, plus 1,080 lbs. nitrate of soda	41	218	17.7
Tangier peas	42	227	20.5
Barley	28	163	12.3
Melilotus clover	46	252	19.8
Barley, plus 540 lbs. nitrate of soda	42	204	15.7
Fenugreek	43	255	16.8
Barley	35	164	12.7
Lentils	43	204	19.5
Average yield on legume plats	40	226	17.9
Average yield on barley plats	30	161	12.3
Aver. increase due to nitrogen added by legumes	10	65	5.6

The following table shows the average increase in pounds material actually produced on plats receiving nitrogen additions from cover crops or nitrate of soda over the yield of the barley plats. Each material named

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.

Largest pipe works in the West.

WEISSBAUM PIPE WORKS

165 Eleventh St., San Francisco

PATENTS That Protect and Pay

Send Sketch or Model for FREE SEARCH

Books, Advice, Searches and Big List of Inventions Wanted FREE

Watson E. Coleman, Patent Lawyer, Wash., D. C.

$45.00 SAVING

Introductory Special Sale

$45.00 SAVING

The National Potato Digger

FREIGHT PREPAID TO ANY POINT ON PACIFIC COAST

THIS DIGGER ALWAYS SOLD FOR $125.00

Cut out this advertisement. This is worth $45.00 to you. This National Steel Frame Elevator Digger has always sold for $125.00. It is listed in our catalogue at that price. For the purpose of introducing this wonderful digger we are offering them direct to the rancher at $80.00 each, freight prepaid. We give you this saving instead of paying it out for salesmen's salary and traveling expense to come and see you. This is a $40.00 saving on the regular price plus $8.00 for freight, making $48.00 saving in all. Digger is guaranteed superior in construction to anything you can buy. Thorough free trial allowed. Full description given in our 300 page catalogue, mailed on request. Write today.

QUALITY ARNOTT GUARANTEED

Arnott & Company
Dept. 13.
118 LOS ANGELES STR.
LOS ANGELES, CALIF.

QUALITY ARNOTT GUARANTEED

17 Jewel Waltham Watch in a Solid Nickel Dustproof Case $10.45

Just the watch for the man on the farm. The movement is solid nickel (not brass), has cut expansion balance, breguet hairspring, patent regulator, large heavy hands, and railroad dial. A guaranteed timekeeper. Carry it 30 days, if not satisfactory, return at my expense. I do not have the high city rents or expense, you get the benefit.

J. G. HEERMANCE, Suisun, Cal.

Watch Inspector Southern Pacific Company

KILMOL SQUIRLGOPHENE

WILL KILL 'EM ALL

Everything FOR GOPHER AND SQUIRREL Destruction

KILMOL SQUIRLGOPHENE

with U. S. Destructor, or Waste Ball Method, is 100% efficient.

KILMOL WILL KILL 'EM ALL

5-Gallon Tin of Kilmol, $6.00
Waste Balls, 50c per hundred

U. S. Government Poisoned Barley (New Formula), $8.50 100-lb. drum.

The Old Formula Improved.
It Is Different.
Gets the Foxy Old Squirrels.

Strychnine—5-oz. tins, 60c per ounce.

A postal will bring you valuable information. Write now—don't delay.

HERBERT F. DUGAN
Dept. K,
1170 Sutter Street,
San Francisco.

gave the number of pounds per acre more than a barley cover crop alone.

*Tangier peas	5,763
Melilotus clover	5,573
Barley, plus 1,080 lbs. nitrate soda	4,903
Canadian field peas	4,606
Lentils	3,418
Burr clover	2,883
Barley, plus 540 lbs. nitrate soda	2,503
Fenugreek	2,454
*Barley, plus 810 lbs. nitrate soda	1,779
Bitter vetch	1,585
*Common vetch	992
Barley, plus 270 lbs. nitrate soda	462

*Note:—These plats lie next the public road and suffer certain losses for this reason and so in reality cannot be compared with the others.

Bitter vetch or vetch ervilia is variety to use when comparing the vetches with the other legumes as to their effect on the crop following.

From these charts one can easily see the increases in the yields of the field crops on the legume plats over those on which barley was grown. This increase could only be due to the nitrogen added by the vetches, peas, etc., as the actual organic material turned under was as great on the barley plats as on those growing legumes.

Another proof of this statement lies in the fact that the barley plats required large additions of nitrogen, to bring up the yield of the crops following to the standard of those plats where legumes had been grown and incorporated into the soil.

Our results show that from a twelve ton yield of Melilotus clover, we have gotten an effect equal to that resulting from an application of from 500 to 1,080 pounds of nitrate of soda to the acre, costing from $12 to $30. This fact certainly warrants the careful consideration of the agriculturist and in particular he who is interested in citrus culture, where intensive fertilization is so generally practiced.

Difference in Legumes.

One other important item is covered by this experiment. That is in regard to the comparative merits of the various legumes used.

Several new legumes have lately been introduced by the Bureau of Plant Industry of the U. S. Department of Agriculture. Two of which are very promising. These are the Tangier pea and the purple vetch. The Tangier pea is of very vigorous growth and in the five years average exceeds all others in tonnage of green tops produced. It has also given marked increases in yield of field crop following incorporation of tops with soil, and is in many ways a valuable acquisition to the green manure crops. It has, however, one great fault. The seed is very difficult to produce, as the pods burst and shatter the peas very badly when ripe. Professor McKee of Chico, who has been working with this variety for some time, believes the seed of this pea may never be produced cheap enough to be used as a cover crop in citrus orchards. At present, the seed is not available in commercial quantities.

The other variety mentioned above, the purple vetch, had only been grown by us for two years and but once in our regular plat experiment. It has, however, yielded a wonderful tonnage of green tops per acre and grows more rapidly in the fall than any other legume tried. It is aphis resistant and so vigorous that weeds have absolutely no change to develop with this vetch.

Professor McKee has been working with this vetch for several years and has been able to establish the seed-growing of this variety in Oregon and this year (1914) for the first time a limited quantity of this seed will be available for commercial planting.

The fact that we have not had a field nitrogen test of this crop makes it impossible for us to say just how this crop will compare with the others we have tried, but the features, such as aphis resistance, rapid and early fall growth, and its weed proof nature, make it a plant worthy of extended trial by citrus growers and all others interested in green manure crops.

Melilotus Excellent.

Of those varieties which we have tested thoroughly none gives such promise as does the Melilotus or sour clover (Melilotus indica). This variety has given the largest increase in the crop following and for soil types similar to the decomposed granite soil of this station, we believe it will be hard to equal.

It grows very well on the heavy red soils of West Riverside and in its wild state seems adapted to quite different soil types. For this reason this clover is worthy of trial in all citrus sections. Sow about thirty-five pounds of seed to the acre (acre solid land; reduce when trees occupy any large portion of the land). Sow the seed broadcast and harrow it into the soil. Follow sowing with a thorough irrigation; for since the seed can only be sown at very shallow depths, the soil must be wet practically to the surface if a good germination is to follow. Otherwise, the plants will not appear until the fall rains wet the surface.

Success with any clover demands better moisture conditions during the early stages of growth than are required by such plants as the vetches or peas having larger seeds, which allow of a deeper planting and furnish the tiny seedlings more nutriment from the food stored in the seed.

We believe, however, that where extra water is available the benefits derived from the deeper rooting system and more lasting nature of the organic material will amply repay one for the slightly greater expense incurred in the handling of this crop.

Rules for Cover Crops.

From the results of this experiment we would give as general rules for the handling of cover crops the following:

Plant that variety of legume which in your community gives the largest tonnage of green tops per acre.

If possible, sow seed during the month of September.

Determine what is the average seedage per acre in your section and add 50 per cent to get the amount of seed you shall sow. More poor results with cover crops have been due to insufficient seed than to almost any other one cause. The more seed sown to the acre, the more of the legume you will have and the less weeds, which add no nitrogen to the soil.

Sow preferably with drill on level land where the permanent furrows may be made very shallow; otherwise, broadcast the seed and cultivate into the soil.

In the case of drilling the seed, sow after a thorough irrigation. When sown broadcast, sow just preceding your September irrigation.

Never sow a cover crop in an orchard when the available water is only sufficient for the trees.

In sections where the aphis attack the vetches and peas, use one of the clovers or fenugreek.

Do not overirrigate your cover crop, as the excess water in the soil will stimulate a late growth of the trees, making them less resistant to cold.

Plow the green crop under early, and plow deeply.

(Note—The above is a paper given by Mr. Mertz, assistant in pomology at the Citrus Experiment Station at Riverside at the Fruit Growers' convention at Davis. It contains an immense amount of most valuable information as to the actual yield of the different cover crops and what is still more valuable, their effect in increasing yield of the crops commercially produced on the soil where they were grown. Some striking results can be seen to have been secured, including comparisons of different legumes. Regarding the weight of the different cover crops, it should be rememberd that the weight of roots could not be determined, although the roots of cover crops weight for weight are usually more valuable than the tops. As next month will be time to get ready for cover crop planting in many places, this paper will be of most value just at this time.—Editor).

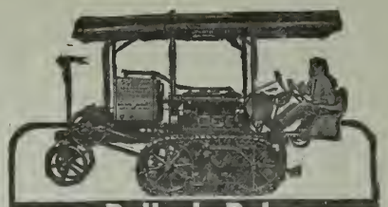
THE COUNTRY PROSPEROUS.

According to the Crop Reporting Board of the United States Department of Agriculture, things look excellent all over the United States and in California in particular. All crops on July 1 were estimated at 101.4 of average, as compared with 93.3 of average for final estimate of 1913. California crops average 110.0 of average condition. For the country at large, winter wheat leads in condition, with 117.3 per cent, and tobacco is poorest, with only 78 per cent of average. As a rule the good crops seem to be those that will do the most good.

Following are the estimates for the whole United States of several of the leading crops: Pears, 110; barley, 109.7; spring wheat, 109.1; apples, 108.1; kafir corn, 107.9; alfalfa, 106.6; lemons, 104.9; oranges, 104.6; grapes, 103.8; hops, 103.2; sugar beets, 103.1; corn, 101.3; oats, 101; cantaloupes, 101; beans (dry), 100.8; peaches, 99.3; hay, 98.7; cotton, 98.6; rice, 98.3; onions, 95.4; potatoes, 94.3; pasture, 93.7; lima beans, 90.9; tomatoes, 89.3; sweet potatoes, 88.3; clover hay, 85.1.

CALIFORNIA COTTON.

The remarkable increase in cotton growing of California is shown by the report of the U. S. Reporting Board, showing 35,000 acres in cotton in California, as compared with 14,000 a year ago. The acreage is 150 per cent greater. The condition is stated to be 100, as compared with 95 of 1913 and 97 as a ten-year average. The condition for the whole country is 79.6 as compared with 80.7 average and 81.8 in 1913. The cotton of California is concentrated in the Imperial and Coachella Valley.



Bullock Baby Creeping Grip Tractor

Another notable achievement of the Bullock Tractor Co. Pronounced by expert agriculturists the ideal type and size tractor for small farms. Its low price, adaptability to do every kind of traction work and its low cost of operation makes it quick and big profit-maker on farms even as small as 160 acres.

One important feature of this tractor is that it steers with the creepers at the same time with the front wheels, permitting short turns and operating close into fence corners; the machine can turn within its own length.

Interesting literature describing the Bullock Baby 30-20 H.P.--also 3 larger sizes with prices sent on request. Address

BULLOCK TRACTOR CO.
1807 Diversey Parkway, Chicago

Works Easy On Any Job

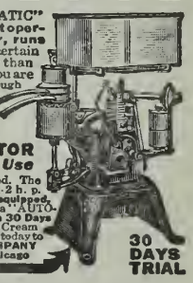
Especially Adapted for Small Farms and Orchard Plowing.

Get Prices

BINDER ATTACHMENT with corn harvester cuts and throws in piles on harvester or in winrows. Man and horse cut and shock equal with a corn binder. Sold in every state. Price only $20.00 with fodder binder. J. D. Borne, Haswell, Colo., writes: "Your corn harvester is all you claim for it; cut, tied and shocked 65 acres milo, cane and corn last year." Testimonials and catalog free, showing pictures of harvester. Address PROCESS MANUFACTURING CO., Salina, Kansas.

Hand-Crank Skimming
W-A-S-T-E-F-U-L

The crankless "AUTOMATIC" saves butter fat—because it operates on its own power, runs absolutely even. No uncertain handpower. Skims faster than ten men milking. When you are through milking you are through skimming. Costs only 3 cents per hour to operate.



AUTOMATIC
CREAM SEPARATOR
Over 10,000 in Use

Engine and separator combined. The engine is a little wonder at 1-2 h. p. No gears to wear. Magneto equipped, unaffected by weather. Ward's "AUTOMATIC" guaranteed, sold on 30 Days Trial at our risk. Let us send Cream Separator Book No. 15. Write today to MONTGOMERY WARD & COMPANY Chicago Avenue Bridge, Chicago

30 DAYS TRIAL

Run Your Car Economically

Many engine troubles and the resulting delays and repair costs can be avoided by the use of a suitable lubricating oil. True economy lies in the use of a high grade oil which gives perfect lubrication and assists the engine to do its work regularly and efficiently.

ZEROLENE

THE STANDARD OIL FOR MOTOR CARS

is the *best auto oil the Standard Oil Company can make;* produced by experts and proved by successful service in thousands of cars of all types. Its perfect lubrication keeps the motor cool—allows it to deliver full power and cuts repair charges to a minimum.

Dealers everywhere. Ask our nearest agency about delivery in bulk.

Standard Oil Company
(CALIFORNIA)

Answers for Farm Problems

BUYING MOUNTAIN LAND.—Where can I find a piece of land along the mountains which will furnish grazing pasture nearly all the year round, including fresh running water and some timber, for all-round farming, some stock raising, cattle and goats, some dairying, chickens and geese? Will a 40-acre tract do, possibly close to government land, which could be rented for grazing purposes? Which is the proper way to find out the bought and unbought land? Are there any maps so marked?—H. K., Sutter, Cal.

The descriptions of agriculture and goat raising in the old mining country in this issue will give a good deal of light on the questions you ask, as will an article in the September issue on fruit growing in such sections. As a rule you cannot find the opportunity to let your stock run free on anything but your own property. The United States Forest Service does, however, lease the privilege of running a certain number of stock on the forests in the mountains and gives owners of lands in the forests first choice, so if you can secure some agricultural land in one of the forests you can come quite near the ideal you express. Write to District Forester, San Francisco, for information on how to get such land. You can write to General Land Office, San Francisco, for information regarding location of government land open to entry, but as we said in previous issues, it is an extremely hard matter to find government land any good at all open for entry unless with help of some outside agency. Even so, it is pretty isolated at the best and not a big bargain. If we were intending to hunt for land such as you describe, we believe that we would take a long hike through parts of several counties where we thought the right kind of land could be obtained and get from residents all information possible as to land in vicinity for sale by government or individuals. Maps can, we believe, be secured from Land Office for a consideration, but maps won't show quality of land. At every county seat are maps of all the counties, giving ownership of every foot of ground. For mountain farming we would want much more than forty acres of tillable land, and in the mountains only portions of any farm are tillable. Furthermore, pasture is not available all the year round. At least a good deal of hay should be raised for the stock to carry them through the winter.

BORDEAUX MIXTURE.—Kindly tell in your next issue how to make Bordeaux mixture.—J. M., Oakland.

Bulletin 218 of the University of California on California Plant Diseases gives the following directions regarding Bordeaux mixture:

"Take copper sulphate (bluestone), 5 pounds; quicklime (good stone lime), 6 pounds; water, 50 gallons. Put the bluestone in a sack and hang so it will be suspended just under the surface of a barrel of water over night, or dissolve in hot water. Use one gallon of water to one pound of bluestone. Slake the lime in a separate barrel, using just enough water to make a smooth, clean, thin whitewash. Stir this vigorously. Use wooden vessels only.

"Fill the spray tank half full of water, add one gallon of bluestone solution for each pound required, then strain in the lime and the remainder of the water and stir the mixture thoroughly. Do not mix the solution hot.

"For extensive work large amounts of bluestone and lime may be prepared in advance in separate receptacles, making stock solutions of definite strength. (One pound to the gallon is convenient). Always dilute well before mixing.

"The formula may be varied according to conditions using from 3 to 8 pounds of bluestone to 50 gallons of water and an equal amount or slight excess of lime. Use the stronger mixture in rainy weather. Keep the mixture constantly agitated while applying.

"Recently the so-called hydrated lime has been used to a considerable extent in making Bordeaux. Chemically, the hydrated lime is entirely satisfactory for making Bordeaux mixture, and it is somewhat more convenient for use than stone or quick lime. The same quantities should be employed as with the latter. Objection has been made to hydrated lime in some quarters on the ground that Bordeaux mixture thus prepared settles more readily and has a coarser consistency. We are not prepared to state, however, that this is a general fault of hydrated lime Bordeaux.

"In using large quantities of Bordeaux mixture or any other fungicide it is very convenient to place tanks upon an elevated platform to which water is piped. The various solutions can then be prepared upon this platform and discharged by gravity into a spray tank. In the case of Bordeaux mixture it is advisable to run the diluted bluestone and lime solution into a single trough and let them drop from this into a spray tank as in this way a more complete mixture is secured."

The bulletin quoted above contains receipts for many other spraying formulas and describes diseases on various plants for which they are to be used. Would advise all persons interested in spraying to get this and other University publications.

DRYING INJURED QUARTER.—I have a fine cow that cut one of her teats on a barbed wire, splitting it badly. It has been operated on twice, but was a failure. The teat each time "sloughed" to the extent that there is only about one inch left and that is very difficult to milk, as the milk channel has closed to the extent of a small needle and the end of the teat has hardened and made a sort of callus. It takes 15 to 20 minutes to milk out half a pint of milk. I want to know if I can dry up that one teat without injuring the others, or what would you recommend doing in the case? I am told that the milk channel can be enlarged with the tube recommended for such provided it can be kept in situ, and I thaink that can't be done without sewing it in the bag.—O. C. O., Rexburg, Idaho.

You can dry up that quarter without injuring the others and, in fact, that is the best thing to do. Dry it up as you would any other teat; that is, milk out only part of what can be removed and in a short time the quarter will be dry. You will have no success trying to enlarge the milk channel with tubes and after a lot of bother it is likely to go dry after all.

OCEAN SHORE FARMING.—I have 100 acres near Fort Bragg, Mendocino county. The land is nearly level and one mile from the ocean. Is there any variety of alfalfa that would grow well in this vicinity? I could irrigate 20 or 30 acres. What would you advise raising as a forage crop for a small dairy herd? Do potatoes grow well in this section? When should I plant apple and pear trees? There are 70 acres in forest—bull pine with a few small redwoods. What is the best way to clear this land?—J. R., Millers, Nev.

Answer by E. B. McFarland.

Alfalfa of the common sort will grow on your farm if properly cared for. See our article on alfalfa in this issue. It is the best forage crop you can have. Grow a few acres of beets or root crops. Potatoes would do well, but we doubt them being profitable. Years ago Bolinas potatoes, grown under almost your conditions, were famous in the San Francisco markets. Apple and plum trees should be planted in the spring not later than March. Clear the land by cutting down the trees and blowing out the stumps with dynamite. Bull pine usually grows so close together it may be more economical to use a stump puller.

Plow Deep

Deep plowing takes ***concentrated*** power. The Caterpillar not only has plenty of power, but ***it delivers it at the draw bar.*** The long, wide tracks get a sure grip on the ground. There is no waste from slippage.

CATERPILLAR
Reg. U.S. Pat. Off.

Every ounce of power goes into the "pull"—so the Caterpillar can plow deep, and yet pull a wide enough string of plows so there is no side draft, even in dry, hard-baked ground. In most California soils it plows its own width or more.

Now is the time to figure on your fall plowing and the equipment you need. We have the complete outfit for you—Holt disc and moldboard plows—and the Caterpillar to haul them. Let us send you literature describing the entire line. Write today for Catalog F 57.

Everything for the power farmer—harvesters, disc and moldboard plows, harrows, scrapers, supplies and lubricants.

The Holt Mfg. Co., Inc.

Stockton, Cal. San Francisco, Cal. Los Angeles, Cal.
Spokane, Wash. Portland, Ore. Peoria, Ill.
New York, N. Y. Houston, Tex.

GAS ENGINE CYLINDER OIL

TRADE MARK REGISTERED 1873
VALVOLINE

FOR
TRACTORS AND CATERPILLARS
FORTY YEARS' EXPERIENCE AS REFINERS.
VALVOLINE OIL COMPANY
San Francisco. Los Angeles. Portland. Seattle.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

Answers for Farm Problems

NERVOUSNESS IN HORSE.—I bought a horse the other day at a sale and he has a peculiar sickness. The owner said it started a year ago and he does not know the cause of it. The horse is seven years old. Every time he gets into the stable or out to the water, or almost any time there is some kind of excitement, he trembles like a leaf and stands like he would fall down, straddling with his legs. He is a good worker and it don't seem to affect him except around the stable. He acts as if he was scared to death. Please try to find something for him, if it is curable.—J. H., Sacramento.

We forwarded this question to Prof. C. M. Haring, Division of Veterinary Science, University of California, who states:

In reply to above question, would say that we have observed nervous symptoms similar to those described in a horse that had recovered from lock-jaw. These symptoms gradually disappeared. It is possible that the animal described will recover without treatment, and I would not advise any medicine unless it is possible to determine accurately the cause of the trouble.

KAFFIR IN SACRAMENTO VALLEY.—Will you kindly inform me in the Orchard and Farm whether Egyptian and kafir corn will grow in Sacramento county without irrigation on soil of from three to four feet deep, and how to grow it, as I have never raised any before?—W. C. D., San Francisco.

Kaffir and the other grain sorghums are warm-weather plants; that is, they have to be planted and raised only after cold nights are gone. As this means late planting, about the time Indian corn is planted and not before, and rains are doubtful after such time, we are not certain that one could be sure of having enough moisture near the surface of the soil to bring them up, though they will sprout with only small amounts of moisture. If you had the land furrowed up and planted the seed several inches deep in the bottom of the furrow, the seed certainly would sprout. If a moderate amount of rain should fall just before or soon after planting, they could be raised all right without irrigation, provided the land had been attended to in a way to conserve moisture; that is, if it had been kept plowed and cultivated to prevent plant growth and surface evaporation. It would be far safer and better to irrigate, cultivate and then plant the seed and there would be sufficient moisture from irrigation to mature the crop. On your shallow soil there should be very light seeding, for the heavier the stand the less moisture for each plant. Probably without irrigation you could do little with kaffir. Dwarf milo would probably be best of California varieties and believe that feterita, which takes less moisture than any of the sorghums, would give best results of any. Sow thinly in shallow furrows three and one-half or four feet apart and cultivate as long as you can easily get through rows with a horse. About two to three pounds of seed to the acre should be used, or the smallest possible amount to get an even distribution. Half a pound to the acre would be ideal if it could all be put in the right spot. Plenty failures result from too thick seeding, especially when moisture is scant. With good irrigation a heavier stand is perfectly feasible. One stalk every twelve to fifteen inches under your conditions would be about right.

In regard to above will state that most of our ideas on growing Egyptian corn and similar grains on rainfall alone under your conditions are based upon theory, as all such crops that we have seen in the Sacramento valley have been grown with irrigation. If any one has had definite experience that will help, or can add anything, we hope that when time spares they will write in about it.

About now it might be mentioned that the feeding of any sorghum after it has wilted for lack of moisture is dangerous, as a poison develops in wilted sorghum (standing). There is also danger from second growth sorghum, though not if it is making good growth and in good condition.

GRASS FOR VALLEY PASTURE—I would like to know what to do with 50 acres of pasture land in the San Joaquin Valley near Merced. It was bluegrass pasture four years ago, and although there is irrigation water this was not turned on with our last three dry years, consequently the bluegrass has died out, or nearly so, and the natural grass has gotten the best of it. Would I have to plow it all up again, or could I throw grass seeds on top? What kind of seeds would you advise me to use? I want to use pasture for cattle and hogs.—C. D., San Francisco.

If you would sooner have grass than alfalfa, which is the best crop in California for cattle and hogs, would suggest English rye grass. If bluegrass would do under your normal conditions, rye grass would do very much better. It is well adapted to California and bluegrass is not. With plenty of irrigation red clover mixed with rye grass would be a big improvement. You will have to sow them on plowed ground, or the native grasses will never give them a chance. Sow in the fall at the time you would ordinarily plant barley, using barley as a nurse crop.

BEES AND RASPBERRIES—Is there any law about bees destroying another man's crop. One of my neighbors has 50 or 60 stands of bees and they have completely eaten up all my raspberries. They suck the juice from them and leave nothing but the dried hull. By answering this in your paper you will confer a favor on many of your readers in this valley.—J. C. S., Napa, Cal.

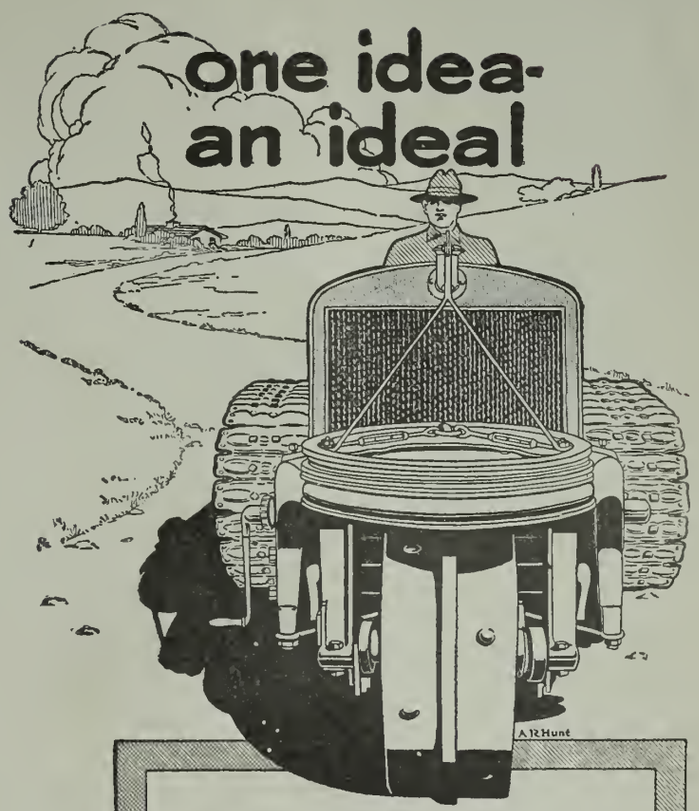
Practically speaking, there is nothing you can do in this matter. The best that legally could be done would be to recover damages, which would be hard to prove as definitely as the law would require and would be many times more expensive in money and heartburn than the berries saved would be worth. Several similar cases have demonstrated that the bees are not as responsible for injuries as appearances indicated, mostly following an injury done by another kind of insect. Bees are now recognized as being more of a help than an injury to fruit production in general, and we believe that you had better grin and bear it. The law is a bad enough thing to get into at the best of it, and you would not stand up well in this case. And when a man has to stand something he don't like, he'd better be happy about it and be done with it.

INSECT IDENTIFICATION—Enclosed please find a bug I would like to have identified. When we came to this place there were a lot of old buildings, which we tore down, and under the shakes there were thousands of these bugs. We made a pile of all the old lumber and burned it. There are a great many of these bugs left, but we hope that when things are cleaned and whitewashed we will be rid of them. The people around here say that these bugs kill chickens.—Mrs. M. E. H., Fairmead.

The insect was considerably demoralized by his journey, but was submitted to Prof. C. W. Woodworth of the University of California for identification, who states:

"The specimen is so crushed that I cannot make sure positively what it is. My guess is that it is Corizus Hyalinus, one of the Corcidae. These are often very abundant and are plant feeders, but are not usually considered among the scriously injurious forms. There is surely no relation whatever between this and chickens."

It is a difficult thing to send an insect in an envelope and have it arrive in a recognizable condition. We would suggest that a pill box or other small receptacle be used when possible.



One idea—a new one—that of fitting a ball bearing to a tractor drive wheel, forms the foundation of The Yuba Ball Tread Tractor.

On that foundation is built a machine which embodies other ideas—some new and some not—some taken from tractors, some from automobiles and motor trucks, and some developed by the designers.

THE YUBA BALL TREAD TRACTOR

In The Yuba Ball Tread Tractor these ideas are combined to produce an ideal machine for farm and general road work—powerful, compact, dependable, easy and economical to operate; able to turn in an orchard row, in the bottom of an irrigating ditch, on top of a levee, or in a narrow roadway; usable to prepare the land in Spring, operate the pumps to irrigate in Summer, harvest the crop and haul it to market in Autumn.

There is a booklet telling how.

THE
YUBA CONSTRUCTION CO.
Dept. B 1 433 California St.
SAN FRANCISCO
Works: . . Marysville

ORCHARD and FARM
ESTABLISHED 1883
IRRIGATION

VOL. 26 AUGUST, 1914 NO. 8

Issued Monthly at Hearst Building, San Francisco, Cal.
Country Life Publishing Co., Publishers
D. J. Whitney ----------Editor

Eastern Office,
Wallace C. Richardson (Inc.),
41 Park Row, New York

Middle West Office,
James A. Buchanan,
Marquette Bldg., Chicago

SUBSCRIPTION RATES
One year, domestic postage paid----50c

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

MONTHLY COMMENT

One of the most enjoyable trips we ever made gave the opportunity for preparing the story of our first reading page this issue, and a little explanation will be in order. In our work of keeping out and around the State for a part of every month, we went to Placerville early in July to investigate the fruit industry of El Dorado county, which centers there, and found Horticultural Commissioner Hassler just about to start on a trip to last several days around the southern part of the county and hesitated something less than a quarter of a second about accepting an invitation to go along. Some of the results of that trip and of the visit around the Placerville part of the county later are shown in the story, which can apply to as much of the Sierra foothills of about the elevation named as any one sees fit to apply it to.

The best part of the trip was that it was over country of which nobody but the residents knows anything. They go in and out, but nobody else does; there are no summer campers, no hunters, no automobile parties, no stage running, though the mail does, and as fine, progressive a type of American farmers as exists anywhere can there be found. More railroads and better roads to help in hauling farm products is what country like that needs, and both will come. Unfortunately space forbids the use of another good story about the county, but that will come later. And, if anybody wishes that his county would have its innings, it will be all right, we get over the whole State and many others besides the editorial 'we' write for the paper. The above is simply given to explain the localization of the story of foothill farming.

If Orchard and Farm tries to be one thing more than another, it is to be a paper with a policy and that policy is to keep absolutely in harmony with the trend of events, to have in each issue just what will be of most service agriculturally to California and the Pacific Coast at the time. It does not take much effort to see that we are living up to that idea pretty closely and it is very gratifying to notice that our readers seem to feel as we do about the subject. Take the present time. Take almost any farmer in irrigated California to-day, and irrigated California is typical California, and ask him what was the most pressing single question for this year and he would at once reply, "The right way to dispose of alfalfa at a profit." This problem is only temporary, of course, in its present importance, as alfalfa is too fine a thing to go begging very long, though to a certain extent it is a question that will be ever with us until our agriculture is settled a bit more than it is now and we get our farming down to a good working basis. It is, of course, impossible at once to create a demand for alfalfa when the stock does not exist within reach to eat it all and suggestions for its proper disposal will have to be applied gradually. Looking through each issue of the paper something to help in finding a permanent working basis will be seen, in articles on beef cattle, sheep and swine. Certain it is that the dairy cow cannot be made to eat all the alfalfa that is produced. Possibly if all the alfalfa on the Pacific Coast were used in dairying the milk, cream and butter produced could be consumed at fair prices, but not everybody is going to be a dairyman for the sake of getting rid of the alfalfa on his farm, not would it be wise to do so. In every other part of the country meat production is an important part of farming. It is important here too, though dairying is given far more promotion and publicity than meat making in proportion to the relative importance of the two kinds of farming. As time goes on more stock cattle by far will be kept on the intensively farmed ranch than are kept now and we flatter ourselves that the articles appearing on intensive beef production, pork and mutton production are helping somewhat in this direction and fulfilling a long felt want. By aiding this we are protecting the dairyman from the competition of many persons who perhaps would go into dairying without any special taste for it only to make partial failures, we perhaps are having the land and alfalfa that would go for poor dairying used for beef and mutton production, to supply the meat-hungry markets and to give homes to prosperous and contented farmers. An examination of our columns will indicate the correctness of the above statements. Take the matter of hogs, for instance, it is all right to tell people to raise hogs, but it is disastrous if the hogs die. Indicating how to keep them healthy will mean both an excellent market for alfalfa and a profitable source of income. And next month we might mention, we expect to have a very fine article on pork production, which limits of space keeps out now. For the dairying side of alfalfa, showing what crops supplement alfalfa helps the alfalfa market by taking acreage from it to other things, provides a fine rotation of land, and the silo publicity we have given not only helps the other crops, but shows how alfalfa can be used as silage too.

From Erin we get the saying that "It's the pig that pays the rent." Here in the United States it is the hen that looms big. She doesn't pay the rent as a rule, for the farm is owned in whole or in part, but she is the lady that brings in the identical income. The fruit or grain or what not may be sold once a year and provide the basis for living, but the hen is the standby for supplying the funds in small amount all the year round. She or her sons provide the Sunday dinner at other times, and often furnish most of the fresh meat for the family. The eggs become the leading feature of the breakfast, the important part of the cake, and both eggs and fowls go to the dealer for the pin money that comes in so handy, especially on those farms where the main income all comes about at one time. We could not say, "Long live the hen," for many hens live too long as it is, but we can say, "All honor to her."

Over mankind and womankind she exerts an irresistible attraction. On every farm she is found and invades the cities, so that office toilers in their back yards and in every spare space fix up coops and whatever else will best supply accommodations for her. Once smitten by the poultry fever, there is little hope for recovery; all who keep hens will on slight or no provocation wax eloquent in their praise. It will draw their thoughts from politics—even from politics in these days of many elections—and as a topic for conversation the weather is outclassed entirely. The hen keeper will talk poultry by the hour and will enjoy his talk more than talk about his rising son and heir. The newspapers use the egg as one of their main topics for editorial discussion, especially when the cost of living is on the tapis, the egg provides the greatest hope for the overcoming shortage of meat, the hen and her family provide one of the greatest possibilities of meat production themselves. Evermore the hen waxes great in fame and importance. Success on the backyard poultry farm is the greatest stimulus to the "Back to the land" movement that exists.

Ever the conviction grows that the farm, the ordinary farm, is the place of all places from which should be supplied a large part of our eggs and table fowls. Diversified farming is the demand of the age, though specialized farming seems to be on the boom, too, and whatever else is done, the hen can be used as a secondary ranch industry and give the desired diversification to income and occupation. Table scraps will provide an important part of the diet, depending upon how many fowls are kept; the waste here, there and everywhere will provide not only something for the fowls to eat, but something that will keep them in first-class condition. The insects that they eat will do that much less injury to the regular crops and cut down the feed bill to a moderate amount. Invariably it is known, provided good care is taken, that a small flock of fowls is easier to care for, is healthier, less expensive to feed and lays better in proportion to numbers than a large flock. In fact it is the same with everything, including man, that the more they are crowded together the harder they are to look after and the less the average individual is worth. The common farm is the place for the hen, otherwise she would not have made so much headway with the comparative neglect given to her in competition with the fowls given scientific care on the specialized poultry ranch. It is a universally admitted fact that the profit per hen in a large flock, no matter how well cared for, and the average egg production cannot compare with the profit and egg production from a few good hens, reasonably well fed and cared for. Therefore, long may the hen thrive on the general farm.

Two things destroy the possibility of increased poultry production on the average farm. One is the high cost of feed from the average country dealer. The other is the small price for eggs given by him. It is too much to expect a person to pay away above market price for his raw product—the feed—and get away below the market price for his finished product—the eggs—and then stay in the business. In the average country district, provided it is not jumping ahead in prosperity, it can almost be said that upon the encouragement given the raising of poultry on the average farm through moderate prices for feed and good prices for eggs depends the welfare of the community. Without the poultry one of the greatest agencies for bringing in money needed for the many minor expenditures is removed and the whole income from eggs and fowls is lost to the community. With good prices both ways for grain and eggs, a nice income comes to every farm, every week, every month. There is no standard product that can be bought and sold with as little margin for expense and profit as grain, and hardly a farm product in California for which the farmer should be able to obtain fairly near market price as for eggs. It is by co-operation in buying his wheat and grading and marketing his eggs that the general farmer has the opportunity for getting his wheat at reasonable prices and selling his eggs for reasonable prices, provided his dealer tries to catch him coming and going, as some do and others don't. Co-operation is not a cure for all our ailments, real or imaginary, but it helps a great deal in both fact and imagination, and imaginary troubles always seem more severe and harder to bear than real ones, because we really know so little about them.

No agricultural paper is complete these times without some rumpus over the proposed Universal Eight Hour Law. There are still some people foolish enough to consider the amendment to be voted upon next November a good one to support as it stands, and that bill, if passed, will have to stand without alteration no matter how badly need of change is indicated. People who think that errors in its application can be fixed as they become apparent only show their crass ignorance. To them a few facts already stated may be repeated. The last legislature, progressive enough in all truth, after clearly investigating all sides of the matter, firmly decided that it was unwise to apply the eight hour day to women in agricultural and domestic pursuits and the decision satisfied everybody concerned, the women engaged in fruit canning, drying and similar occupations during the summer months being particularly pleased. Yet supposedly reasonable beings, calmly going on general principles alone, are ignoring what both sentiment and reason dictated at the last legislature and they are going twenty times as far as the legislature refused to go. How much the amendment will be beaten we don't know. However, there is some sentiment attached to the idea of an eight hour law that may carry away the reason of people who don't stop to think much on any matter before them and thus put this bill into effect. Certainly the truth should be known and as big a defeat as possible inflicted upon those who are attempting to perpetrate this great piece of folly.

Unfortunately for the ideas of city dwellers who will take snap judgment as to the views of the farmers on the eight hour proposition, several California papers have been simple enough to believe that many farmers favor the proposed law owing to the fact that certain farmers' organization in a small town in Santa Clara county is stated to have passed some strong resolutions favoring the proposed amendment. Even the wording of the notice sent to these papers should have made them suspect a nigger in the wood pile. The facts of the passing of the resolutions are as follows, according to a letter just received: "The members were starting for home, part were already out of the hall and the remainder said, 'Go ahead.' It is sufficient to say that three-fourths of all who were present were against the eight hour law. Advantage was taken of the confusion of the moment with a result that the promoters of the resolutions have had this published far and wide. Members of the Union tell me that the resolution is not expressive of their sentiments at all." (The published account of the resolutions says that they were passed unanimously, so somebody seems to be misrepresenting things.) Pardon the squabble; we simply feel that the public should not be mislead in thinking that after so many farmers organizations have unanimously opposed the proposed law, any farmers' organization would unanimously endorse it. The subject is too important and the great danger is that voters will not give sufficient thought to it.

Announcement of Great Dairy Show

In line with the remarkable progress of the dairy industry of California, and in harmony with the activity "Orchard and Farm" has displayed in promoting the various agricultural indutries of the State, a great Dairy Show is to be held by the Modesto Chamber of Commerce and the Stanislaus County Board of Trade, cooperating with "Orchard and Farm," at Modesto at the time of the joint meeting of the California Creamery Operators' Association and the California Dairymen's Association. These meetings will be held October 14 and 15. The Dairy Show will be held October 14, 15, 16 and 17, the two extra days being warranted by the importance of the affair and the advisability of continuing the show so that delegates to both associations may have full opportunity to examine dairy cattle and equipment without interfering at all with their convention duties.

The show will stand out as one of the big events of the year, as the National Dairy Show at Chicago is the one great feature of the year for the dairy interests of the United States. This great Dairy Show to be held at Modesto will be the only great gathering in California of anything like similar nature at which dairying and dairy interests occupies all the attention of the exhibitors and visitors. At the State Fair and the district fairs dairying is but one of many kinds of exhibits and concessions and the attention is distracted from it by attractions elsewhere. Here everything will be centered on dairying and the affiliated industries, giving the only opportunity for seeing everything of interest to dairymen together in one place without outside interference.

The Dairy Show will be in the first place a stock show. Dairy cattle of all leading breeds and ages will be exhibited in classes. It is not probable that expensive prizes will be given or any effort made to develop a severe competition for awards, but every necessary step will be taken to bring out the best stock available from a number of the leading breeders.

Working in harmony with the organizers of the Dairy Show are the officers of the various breed associations of California and others connected with dairy and livestock associations and organizations, also many of the leading dairymen of California. These will help with advice and experience to see that the right exhibits come out, that the plans are developed and carried out in the most effective way, and that the show be made of as much interest and service as possible to the dairy industry. The National Dairy Show and work at the State and district fairs indicate pretty clearly the proper lines to pursue. These will be announced through the daily press of the State and in succeeding issues of "Orchard and Farm."

Along with the exhibits of dairy cattles will be shown the various breeds of swine, hogs being an essential adjunct to the normal dairy farm. It is possible also that other kinds of stock in which dairymen would be interested, may be exhibited, but this is not certain.

Outside of the dairy cattle themselves, the great feature of the show will be the display of dairy equipment, which will be the greatest of its kind ever made in California, as the leading manufacturers are intending to exhibit almost everything made for use in California dairying and the handling of dairy products.

Creamery apparatus is to be one of the leading features, owing to the large attendance of creamery operators at the California Creamery Operators' Association meetings. For the dairymen there will be separators and milk house equipment, stable equipment, silos and silo filling apparatus, stock foods and remedies and to the greatest extent possible an actual demonstration of whatever is exhibited will be given.

This Dairy Show is to be held in the Modesto Auditorium, also in a large canvas tent erected close by.

Something That Suggests the Reason for a Dairy Show.

There will also be erected the necessary sheds for the proper housing of the cattle.

The Chamber of Commerce and Board of Trade promise that the town will be in gala array to welcome visitors and celebrate the show. Suitable accommodations will be available for all visitors to the conventions and the show. Although the plans have not been worked out in detail, it seems probable that a banquet will be held for exhibitors and visitors connected with the dairy industry at which all foods will be derived from dairying and dairy products in whole or large part.

The show is to be open to the dairy public, no admission fee of any kind being charged, though possibly some steps may be taken to limit the attendance to those persons actually interested in the dairy industry, provided too full attendance of outsiders develops, for the proper convenience of dairymen.

Modesto was chosen for the Dairy Show for two reasons. The first is the fact that the Creamery Operators' and Dairymen's Associations were to hold conventions there. The second is the remarkable pre-eminence of Stanislaus county, of which Modesto is the county seat, in the dairy interests of California.

In the year ending September 30, 1913, according to the official figures of the California State Dairy Bureau, Stanislaus county produced 7,451,900 pounds of butter, to say nothing of large amounts of other dairy products. It thus led Humboldt county, its nearest competitor, by nearly 2,400,000 pounds of butter. This great output occurred during one of the driest seasons in California history, the output for the present year being estimated at 10,000,000 pounds of butter. In spite of the dry year, there was an increase of nearly 800,000 pounds of butter over the season before.

This progress was made on account of the natural adaptability of Stanislaus soil and climate to dairying. In large part the increase in such a dry season developed on account of the high standard of dairy methods in the county, as Stanislaus county, around Modesto in particular, is noted as being the leading pure bred dairy cattle district of California. Good dairy methods more than made up for the handicap of drouth. The idea of a dairy show is being taken hold of with enthusiasm by the leading dairymen in the district, who will use it to still further encourage advanced dairy methods.

At the last convention of the two organizations named above, the idea of such a show was broached, but it was allowed to lapse until "Orchard and Farm" offered its services to the Chamber of Commerce and Board of Trade in helping to conduct the show in a way that would make it for California what the National Dairy Show is for the country at large.

This is the second great industry which "Orchard and Farm" has promoted during the year by a show or demonstration. At West Sacramento early in June a tractor demonstration was held by this journal which was attended by thousands of interested persons from all over California and the surrounding States. It was commended universally as being a striking success and of large value by both exhibitors and visitors, and the same management that conducted the Tractor Demonstration is to give all of its efforts toward making the Dairy Show at Modesto still greater for dairying than the Tractor Demonstration in June was for Farm Power.

Dairymen will be kept in close touch with progress and plans as the time for the Dairy Show approaches.

Needed on Every Dairy Farm; Berkshire Sow at Hopland Stock Farm.

CALIFORNIA DAIRY LAWS.

Secretary F. W. Andreason of the State Dairy Bureau has been making an exhaustive study of the dairy laws of other States in which the dairy interests are prominent. In view of the ideas regarding an overhauling of our laws, which was attempted at the last Legislature, it is a fact of interest that the California laws are more full, complete and detailed than those received from any other State, apparently giving the Dairy Bureau as much or more duties and authority as similar bureaus have in any State.

Although the policy of the State Dairy Bureau is to be as lenient as is compatible with an efficient enforcement of the law, avoiding arrests where the offender showed a willingness to comply with the spirit of the law, there had been to a recent date 438 arrests and trials since December 2, 1912, at which time the regular biennial report of the bureau was made. The writer looked over the report of these cases. In the great majority of them the defendants pleaded guilty, and in all but an extremely small proportion of the others they were found guilty by judge or jury and fined. Only a very few escaped punishment. The bureau not only appears to have more highly developed laws than other dairy States, but as complete machinery for their effective enforcement as could very reasonably be expected.—D. J. W.

BARN IMPROVEMENTS.

A U. S. Department of Agriculture bulletin calls attention to the fact that there is a wide difference in the quality, cost and value of farm buildings in the United States, largely owing to the fact that there is no set of standards for farm building planning or construction. The lack of such standards causes a great waste of value and efficiency in the building and use of barns and similar structures.

The American Society of Agricultural Engineers is working to correct this situation and will have an extensive report on the subject at the next convenion, to be held in Chicago in December.

Among the topics upon which considerable progress has already been made are the following:

1—Standard plans of stalls, mangers, alleys, etc., in barns. These will embody the correct space units determined after a careful study of the needs of animals, sanitation and the cost of construction.

2—Tentative plans for small farm buildings, including cribs, sheds, etc., with recommendations for convenient and cheap construction.

3—General specifications for barn framing.

4—Essentials of the farm house.

Touch up the thin places in the meadow by applying a thin top dressing of well-rotted manure.

Fresh air poultry houses give good results, even where winters are cold and severe.

Goat Raising and the Goat Dog

By the Editor

One of the most striking features in the raising of Angora goats is the part played by the goat dog. There are romance and poetry in the thought of the shepherd watching over the sheep and directing them under the eye of his master. Poetry and romance do not seem so appropriate for the goat dog, but the wisdom, care, responsibility and effectiveness of the ideal shepherd dog working with his master seem small as compared with what the dog exerts that is brought up to attend to the goats under his sole care and direction, not under the instruction or direction of a shepherd or goatherd.

The dog is so valuable with Angora goats that he is to all intents and purposes a fundamental part of the industry. Under some conditions a dog might perhaps be dispensed with as well as not, but under the usual conditions for keeping Angora goats, it would be foolish to neglect to supply such an inexpensive and effective caretaker.

And let us say right here that the Angora goat is in line to be one of the biggest things for whatever parts of California and the Pacific Coast he is suited to. From every angle he is a profitable animal and a wonder for the small attention that he requires, as compared with the good he does.

There will be found in another part of the paper an account of farming methods in El Dorado county. It is safe to say that Angora goats promise to be the main product of large parts of that county, to provide a greater net and gross income than any other one product on many ranches, and they are well on the way to do so now in some spots. Their main stronghold is in the Fairplay, Mount Aukum section, in the southern part of the county, at an elevation of from possibly 1,500 to 3,500 feet. There are twice as many goats in this section now as three years ago. Practically every farmer has a bunch and is adding to his herd as fast as good animals can be secured. Pretically every farmer either has a goat dog, or is after one as quickly as one can be obtained.

The only reason that goats are so popular in southern El Dorado county and not over the rest of the Sierra foothills is that there have been first-class goats kept there since 1900 and the farmers have appreciated their value. A few goats are kept elsewhere and in Amador county there are said to be a number of high quality herds, but it is only a question of time when goats will be as popular all over as they are already in some places. It is a question of time and learning how to handle them.

The typical country for Angora goats is a rough wooded country with plenty of brush, which is just what is found in the Sierra foothills. Under those conditions there will be coyotes, bob cats and other wild animals that will play havoc with a band of goats unless some protection is given.

Protection can be by man or dog. The man costs a nice sum per year, the dog nothing except his board, and does a better job. The man may be rather worthless, independable and indifferent. The dog is interested in his work, capable and reliable. He is joyful over his occupation and happy in it. Altogether the dog that is well into the business of goat herding is right in his element and worth good wages, of which board is all that need be paid.

It is one of the simplest things in the world to raise a shepherd dog to watch goats, thanks to the generations of sheep herding under the sympathetic training of generations of shepherds, for it is the instinctive knowledge of a shepherd dog that gets him to watch over goats as he does without any definite training. The process used in bringing up a goat dog fits in naturally with the best kind of Angora goat husbandry.

In rough country such as goats are naturally kept it is unwise to allow the kids to go out with their dams until they have reached quite a size and are quite able to look after themselves. Until they can go out with the others they naturally are kept in a corral, or in a pasture near the ranch buildings and by the sheds near or in which the band stops every night.

A Shepherd Puppy and His Kid Playmates on an El Dorado County Ranch.

Under very favorable conditions a doe might perhaps be permitted to take her kid with her all the time, but where there is much brush or the goats range over considerable country, young kids have a chance to be caught in the brush, or more likely go to sleep in the middle of the day and have the band wander on and leave them. Then when the kid is left he can easily be picked up by a coyote, or on waking up find himself deserted and get more lost than ever. The regular practice thus is to keep the kids at home until they are several months old, their mothers staying with them at night after they return from the day's browsing.

This plan fits in well with dog training. A puppy of one of the shepherd breeds is taken and put with the kids. The younger he is the better. A puppy insists upon having company, human or otherwise, and as he cannot get back to his mother or to the house, he quickly makes friends with the kids, which comes easier since in previous generations the nearly related animals, sheep, have been his friends and special care. It takes a very little while for a good puppy to realize that his home, place and family is with the goats.

During this period his food is supplied from the goats. The does come home and nurse the kids. Milk is taken from one or more of the does and given to the dog, making the instinctive friendliness for the goats still more powerful. It is something the same with a dog as with a man—where his meals are, there his heart is also. A dog so raised remains with the goats continuously, his only human friends being those who night and morning take to the goat pen the food with which he is supported.

Sometimes it is possible to take a young puppy and get a doe to adopt him along with the kids. They say of one such goat dog in the Mount Aukum section that his only trouble is in not understanding how it is that he can't eat brush like the goats.

When the kids are old enough to go out with the rest of the herd, the dog goes along, for he believes his place to be with them, and the care of the goats in the woods becomes natural to him. Goats and sheep naturally follow a leader, and the dog knows without being told that it is his duty to look out for them and he knows how to do it. During the day he stays with them and when a strange man, a wild animal or other creature comes near he drives the goats together and circles around, keeping between the goats and danger. And the goats realize their duty also and at the bark of their watch dog they run together and fall back on his protection.

A coyote can lick an ordinary dog, but neither coyotes nor other wild animals dare to attack goats while a dog is on guard. Whether they think a man is around, as is usually the case when a dog is met in the woods, or whether the confident attitude of the dog that he is there to protect his wards and muss up all trespassers, is responsible or not, there are practically no losses from wild animals when a dog is around. As a matter of fact, coyotes hesitate to interfere with a band of mature goats even when they are unprotected, though they will watch out and pick out any straying kids so effectively that in a coyote country there is no goat raising unless dog or man can be there to herd.

They tell some funny things about goat dogs. One puppy brought up as described went to his work like an old-timer, but when the owners added another bunch of animals to the flock he pitched into the intruders and drove them away. The owners tried to make him understand that they were part of the family, but he knew his family better than they. They took him to the house and tied him up for three or four days until the new arrivals would be so at home with the others that the dog would not bother them, but the first thing he did on geting back was to separate them out as if they were a different kind of animal entirely. Both lots went to the woods and he did not interfere with the newcomers, but kept them away from the rest and when they tried to come into the corral in the evening he told them that was the home of his family and they had to stay outside.

Another bunch of goats got into a grain field, and when the owner of the field, who did not own the goats, came along and tried to drive them out, the dog took a hand in it and would not let them be disturbed, although he finally was persuaded that they should be removed.

As a usual thing a dog will not drive the goats unless they are disturbed, or he thinks that they will be. He simply wanders around with them and watches over them. As they have all they need in brush to eat and water to drink, occasionally they will not go home at night and a good dog will stay with them, food or no food. Of course, goats naturally come home at night and some salt is put out for an inducement to make them come, and when they do stay out the owner tries to hunt them up to make them come back. One time a bunch of goats was lost three days, but the dog stayed with them all the time, though he was nearly starved. If a dog does leave the goats to get something to eat he generally runs right back as soon as his appetite is supplied.

The friendliness of a dog for the goats does not interfere with his good sense and he can boss them around in proper style. This is true when for one reason or another he has to drive them home and he will pitch into the laggards like a dog will go after the heels of a cow when he is driving her home. He isn't taught to do so, and he doesn't intend to hurt the goats—in fact, he will see that the goats are not hurt under any conditions, but he knows what they should do and he makes them do it.

The dog is a necessity for good goat raising under normal conditions. You can't take an old dog and train him in, but a puppy of the right breeding is a goat dog by instinct and easily brought up in the way described.

And now for the place of goats in the foothill country like that described. They are a necessity and a money-maker. They provide products that can be taken out of rough country for long distances with ease and small expense, which is one of the greatest factors there is in a mountainous country with few railroads. They clear the land, they provide excellent meat, they produce mohair for which there is a big demand and which commands a higher price than does wool. They require little extra feeding in winter, they live on land that otherwise would be practically worthless and unutilized.

A goat likes grass pretty well, but his especial fancy is brush, of which he will eat almost any kind. The most valuable kind of brush in the foothills is birch brush, or buck brush, which also is extremely valuable for steers, but goats nibble on other kinds of brush continuously also. The goat has more brains than has the sheep and is not contented to eat peaceably at one thing all day long. He must be going after this, that and the other thing, and even when resting he must be stretching out his neck to see if there is anything within reach. He will stand on his hind legs to reach twigs as high as a steer will reach and will try to pull down with his hoof what he can't reach with his mouth. He will climb the steepest hills and go over the roughest rocks. He goes everywhere that there is food to be obtained, and eats almost everything that can be swallowed, making brush available that otherwise would be untouched and by so doing he keeps land clear that otherwise would be so overgrown as to be worthless.

A rail fence will be no more hinderance to a band of goats than to a flock of leghorn chickens, but a twenty-six inch wire fence with no rail on top will stop him and he will not try to see how high it is.

In winter cattle will require hay to keep them in condition in the mountains, but goats can get along nicely on so little extra feed that the expense is almost nothing. A good fall of snow only means that they are so much nearer twigs that they could not reach before. A good shed with tight roof under which they may obtain shelter, some hay when the rain is too cold and long continued to permit foraging, and the goat is happy and prosperous. Shelter and feed are most needed right after shearing, as the Angora to provide the most and best mohair has to be sheared early in spring at a time when there is the most rain and cold

Veight for weight, however, a goat ill not require one-tenth the hay in cold winter in the Sierra foothills at a steer should have.

Angora goat meat is first-class and ousands go to the market as mut-on. A three-year-old wether will ress fifty to sixty pounds, though a ether should be kept six or seven ears to give the most mohair and hen naturally is not as good as in is younger days for slaughter. A oung wether will be worth for laughter about $3.50, and the fleece f a single year will not be much ss if he is a good individual of good reeding.

A good wether will shear seven to ine pounds of mohair, which will ell at about 30 to 40 cents a pound. The longest and best quality mohair ells for far above this figure. A doe vill shear very much less, but gives kid that more than makes up the ifference. A doe of satisfactory reeding and a young kid will cost bout $5. Does rarely have more than ne at a birth, that is, good Angoras, nd the better bred an animal is the ess chance for twins.

There is nothing in getting com-non goats and hoping to breed up y the use of fine bucks. A man ets where he wants to be far quick-r by putting the same money into few animals and letting natural in-rease do the rest, for it is easily een that a flock will double in a ery short time.

The amount of land needed for a and of goats will vary with the ature of the land, but brush land f the right sort will carry about ne animal per acre without trouble, nd that land may be almost value-ess for anything but goats. The eason why goats are in a way to be great big institution is thus easy o see.

In parts of the West, where their nerits are known, they are getting head fast and wherever they are ept right they are soon appreciated. The term goat deserves to be a term f praise rather than reproach, and he goat dog, trained to goat keep-ng by long generations of association vith sheep, is even more deserving f credit and admiration than his an-estors who have obtained fame and respect for their ability, love and faithfulness toward sheep.

SHORTHORN AND PERCHERON SALE

The sale of registered Percheron horses and Shorthorn cattle to be held by William Bond at Mowry station, near Newark, Cal., August 27, will most likely be a benefit to the buyer rather than the seller.

William Bond was born in Lincolnshire, England, and remained there long enough before coming to California, the land of his adoption, to have instilled in him the proper method of securing and maintaining pure bred livestock. His home was near the famous Fens of England, where many a good beast was raised and later carried off the premium at either the Smithfield or Bermingham shows.

The Percherons are a nice lot, all the matured mares being bred from one mare, the original foundation for all his Percherons. The five aged mares range in age from 9 years down, each one has a foal at foot and is again in foal to Inquiet, an imported horse, which has been a successful winner at the State Fair. Two yearling studs should sell well, as either of them will give a good account of himself.

The three-year-old stallion Newark Loyalty is the banner attraction among the stallions. He has a pleasing head and is built right. Anyone needing a horse like this may buy him for much below his real value. The horses are all in nice condition. It seems that with the ever-increasing demand for heavy draft horses in our coast cities that these registered horses should bring out a large attendance. There are hundreds of farmers in this country who need them. Newark is easily reached, being only thirty miles from San Francisco, in Alameda county.

The Shorthorns are a nice lot, 42 head in all. There are only seven bulls in the lot and these are from eight to ten months old, all like peas out of the same pod. They are sired by Perfection; he by Knights Perfection, the bull which has done so much for T. S. Glide in recent years. Perfection is a half brother to A. W. Foster's Tuli King, who in his calf form never was beaten, winning at Sacramento, Salem and Portland. Perfection combines the blood of Hillcrest Hero and Knights Perfection, crossed on the King Edward cows. This rare combination of blood has produced some splendid specimens, as will be seen sale day in the eight yearling heifers and six heifer calves to be sold. Any one of them is good enough to start a foundation herd.

Among the cows can be found some good ones, including six daughters of King Edward, any one of which will increase the value of the herd she goes to. Dora D. D. 3d is perhaps the outstanding cow of the lot, but the beautiful Clover Leaf 4th with her heifer calf is hard to get away from. There are three daughters of Noble Knight, roan in color and beautiful in conformation, all of them suckling calves, by Perfection.

In the lot are ten nice cows to be sold from the Frantic family and descended from the Asburner herd. These cows are great milkers, as their calves running by their side show. It seems a crime to see an elect little bunch of Shorthorns like these dispersed. They are well grown, true to their breed type and in good breeding condition. No doubt the buyer will be the gainer. William Bond's chief reason for selling is that he goes to England to purchase a herd of Lincoln Reds and establish a dairy of this breed on his farm near Newark.

BRENTWOOD IRRIGATED FARMS

"Best in the West"

The Soil is a sedimentary deposit of great depth and fertility. The **water** comes from the San Joaquin River in abundance through a complete irrigation system of the highest type of construction.

The Climate is excellent—a blending of the interior valleys with that of the Coast.

The Markets are the million people of San Francisco Bay district besides numerous smaller adjacent communities.

Alfalfa, fruit, nuts and vegetables grow abundant crops. There is no better location in the State for dairying, hog and poultry raising.

Brentwood Irrigated Farms are for the man who wants the best. All an expert farmer needs to do is visit the property—he will see enough in an hour to satisfy him.

East of Mt. Diablo in Eastern Contra Costa County.

Price $300 an acre including water right.

Write today for illustrated pamphlet, maps, etc.

Balfour, Guthrie & Co.

350 California Street, San Francisco

A. Burness, Resident Agent

Brentwood, Calif.

Advantages of Making Alfalfa Meal

It is an interesting fact that in our irrigated districts where little in the way of stock feed is raised besides alfalfa hay, alfalfa meal is considered a standard supplement to alfalfa hay for dairy cows, perhaps the most commonly used supplementary feed that there is. In theory it would appear fitting to supplement alfalfa hay with a feed from an entirely different source and the general use of the meal, despite a considerable advance in price over alfalfa hay, is a practical demonstration of its essential value. It has a particular significance just now that alfalfa is so abundant that no one knows just what to do with it all and so cheap that there is not much profit in producing it—that is, just at this time.

Despite their same origin, alfalfa hay and alfalfa meal are decidedly different feeds. Alfalfa hay is a roughage, simply one kind of a hay. Alfalfa meal is a concentrate and in just the same class as bran, middlings and many milled feeds. It cannot be substituted for hay, but must be used in small amounts like other milled feeds. Its digestibility and nutritive value is like that of a milled food rather than a hay. It is very generally used alone as poultry or cow feed and when made rather coarse, is excellent in moderate amounts for horses. Mixed with molasses from sugar mills, its value is added to immensely and its characteristics as a concentrate changed greatly. In this form, usually under trade names, it is widely used.

By mixing it with various combinations of molasses, oat chop, rolled barley, cottonseed meal, meat meal, ground bean straw and other products, concentrated feeds of the highest quality for almost all purposes can be obtained. This mixing can be done at the time of manufacture simply by running in the alfalfa hay at one feeder, molasses syrup at a second, oat hay at another, corn at another, and so on for whatever combination is desired.

The progress of alfalfa raising has been phenomenal and the progress of alfalfa meal equally so. Alfalfa in eastern and middle west States is expensive, but it is cheap in the irrigated west. Being universally recognized as a marvel of food value for its cheapness and abundant production per acre, the meal made from it in the many combinations possible with other foods, the wide uses possible in these combinations, and the moderate cost of the resulting concentrates, all offer a still wider prospect for the manufacture of alfalfa meal.

At the present time alfalfa hay sells in the San Francisco market at from $6.00 to $9.00 per ton and with freight expenses, its field value is anything but satisfactory. Alfalfa meal is quoted at $17.00 to $18.00 per ton in spite of hay prices. There can therefore be a considerable increase in production of meal before the difference in price narrows to a fitting amount, and there are several matters affecting the manufacture that favor the meal in price, in spite of the fact that meal is a manufactured and hay a raw product.

Take the matter of freight. Alfalfa itself has hay rates, meal has grain rates, a difference usually of from one third to one fourth, which counts for a good dead, seeing that freight is one of the greatest factors in the price of alfalfa and other hay. This difference in freight rates is due in large part to the difference in space occupied. A ton of loose alfalfa hay occupies approximately 500 cubic feet; a ton of baled hay 215 cubic feet; and a ton of alfalfa meal only 100 cubic feet. A car will hold a much greater tonnage of meal than hay, the meal being much more convenient to store, haul and handle, hence the difference in freight rates and in various other ways.

The meal at first was made in plants located in town; recently it has been made more in the fields by traveling outfits which go from one ranch to another, like a baling outfit. In certain ways this has several big advantages. The cost of land for the erection of the plant is saved, also the cost of building, foundations for machinery and so on. There is also a big saving in hauling and handling of hay. The traveling mill simply goes to the same stack from which hay would be baled and works it up on the spot. Besides the saving in cost of hauling and handling there is a big saving in nutritive value, as the alfalfa leaves, which are by far the most valuable part of the hay, are saved, s they are not, except in part, if the hay has to be baled and shipped in the usual way, or even hauled to town to a stationary alfalfa meal mill.

The meal is thus better than hay on account of the saving of leaves and on account of the milling; freight is also saved and the incidental expenses connected with the greater bulk of hay and trouble in handling; and the cost of milling is made of small account by the doing away with the cost of baling. This cost of milling and grinding is small, often under a dollar a ton for field work counting the hay in the stack as the starting point, but not counting the cost of sacks. A good movable plant can put up approximately thirty to thirty-five, or even more, tons of meal per day. There will be needed an engineer, stacker, feeder, sacker, sack sewer, water boy and horse fork boy to run the outfit doing this work. Including wages, interest on investment, depreciation, oil, lubricating oil, gear grease and repairs, the cost of milling has been less than eighty-five cents per ton, not including cost of sacks.

Compared with cost of baling, and considering the fact that the cost of hauling, handling and freight is less for meal than for hay once the milling and sacking is done, meal manufacture is on an excellent footing financially. It cannot be compared with hay as a feed, being a concentrate rather than a roughage, and being used for a different purpose entirely, and the fact that it is used for different purposes makes a new market for alfalfa hay, permitting much more to be used than if all had to be fed as hay. Although alfalfa meal manufacture is a new thing, the cheapness of alfalfa hay as compared with middlings, cottonseed meal and other food products, its high nutritive value and the immense amount of purposes for which alfalfa meal can be used when properly combined with other products indicates clearly that there is far more of a future before it than just what is done with it now.

MANURE FROM ONE COW.

In experiments conducted at the Louisiana Agricultural Experiment station last year to determine the amount of manure and urine produced by the dairy herd of 20 cows in one year, it was found to be 175 tons of manure and 70 tons of urine. The average amount of manure produced by one cow in a year was 17,520 pounds (a little less than nine tons), and the average amount of urine produced by one cow in a year was 6,935 pounds, or a little less than three and a half tons. It takes little thought to see the value of a cow from the fertilizing standpoint, or to see the profit in preventing unnecessary waste of manure.

Be sure the sows have plenty of pure water to drink, aside from the slop they have. Slop is not drink.

News Notes From Livestock Men

T. B. Gibson of Woodland, who made such a remarkable showing of young things, bred by himself, two years ago at the California State Fair, has recently hired Carl Johnson, well known on this coast as a first-class feeder, to handle his Shorthorns, which will again be seen this year at Sacramento during the State Fair. Two years ago Mr. Gibson purchased a son of Ringmaster (four times grand champion of America) to head his herd of Shorthorns at Woodland. The calves from this young bull will be exhibited this year, and with Carl Johnson behind them they should make a very creditable display.

The Howard Cattle Company of San Francisco purpose making a strong display of their Shorthorns on the fair circuit this fall. E. W. Howard, president of this firm, says that their whole display will be made up of stock of their own breeding. They will exhibit an aged herd, a young herd and a calf herd, and should reports be true, they will be hard to beat. Any breeder can go out and buy a winning herd, but it is something of a trick to breed one that can win.

E. B. McFarland, the Ayrshire breeder of San Mateo, has been doing some real active business during the last few days. D. O. Sullivan, who owns a large ranch at Grass Valley, purchased from him a beautiful Ayrshire bull from an imported dam and an imported sire. Mr. Allen of Berkeley, who runs a dairy herd in the Napa valley, visited this stock farm recently and selected three nice Ayrshire bulls to be shipped to his farm. Since D. O. Sullivan purchased the Ayrshire bull above spoken of he has made up his mind to dispose of all his grade cows on his Grass Valley ranch and is now negotiating to put a herd of pure-bred Ayrshire cattle in their place.

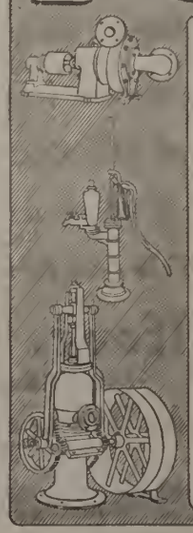
One of the large steamship lines running out of Seattle to Hongkong is arranging to ship 100 head of high-grade Holstein cows to be used for dairy purposes in China. The Orient as well as South America seem to be looking to the North American continent for their foundation herds of livestock.

J. C. Culver has recently returned from an extended trip among the Ayrshire breeders of Canada and the Eastern States. He reports that while visiting the farm of Bob Ness of Howick, Canada, he selected twelve head of Ayrshires to be shipped to his farm near Chico as soon as he could get arrangements made to receive them. Among the lot is a $1,200 cow and several others, which will be exhibited at the Panama-Pacific next year.

C. A. Thayer of San Francisco recently branched out into the live stock business. He has two farms at Willits. On one farm he has placed registered Holstein cows which were shipped from Wisconsin. For the other farm he bought fifteen head of registered Shorthorn cows from the Hopland stock farm owned by A. W. Foster. To head this little herd of Shorthorns he selected a bull sired by Villager and out of a dam by Avondale. This is very select breeding, so when this young bull's calves come on the market they will no doubt be picked up very quickly.

Stey-Brae Ayrshires
BULLS FOR SALE
From imported cows. These bulls are large, with good colors. For particulars and prices, address
E. B. McFARLAND,
San Mateo, Cal.

EVERYTHING
FOR THE
BUILDER
Bargains in Building Material
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.
Carload Lots a Specialty.
H. McKEVITT & SON
1849 Mission St.,
Near 14th St. San Francisco.

PUMPS

Whatever kind of a pump you need—we have it. Handling all styles of pumps we are not obliged to urge any one type on you, but are in a position to help you select the pump best adapted to your particular requirements. We manufacture and sell
Horizontal Centrifugal Pumps
Vertical Centrifugal Pumps
Deep Well Pumps, Power Heads
Windmill Pumps, House Pumps
Illustrated are three of the many different styles. Don't decide on a pump till you put your needs up to our Pump Specialists. Their advice and suggestions will cost you nothing.
WRITE TO US and state your requirements—by guiding you to a right selection we can probably save you both money and trouble.
FREE CATALOG 28-B describes Bean Horizontal and Vertical Centrifugal Pumps.
FREE CATALOG 28-D describes all other pumps; also Bean Distillate Engines.
A postal will bring either or both by return mail.
BEAN SPRAY PUMP CO.
225 West Julian St. San Jose, Cal.

Canada at the Panama-Pacific

Canada's representation of livestock t the Panama-Pacific Exposition in an Francisco next year will be one f the largest and most uniformly ood of any country that will parcipate here in 1915. Canada is a ountry of born stockmen, and their ower as a stimulus in the livestock orld has been felt in every corner f the North American continent. When we speak of the Clydesdale orse in the United States, we feel hat Canada is a part of ourselves, s it is there where he is being deeloped as a horse to handle the eavy work in the timbered country f this land. The city of Toronto as been termed by many Americans s a city of good horses and it is oubtful if there is another city anyhere that can show as many good raft horses on its streets as Toronto an. In Canada, son follows father n the same occupation, and this is nc of the reasons why Canada has een so successful in the livestock orld. The names of Graham, Ness, Davidson and Gibson and many thers, who have been linked in the ork of producing Clydesdales, will ong remain in the pages of history. The fruits of the work of these men ill be seen in San Francisco in 1915. Canada will also be represented with horthorn cattle. Bow Park, James . Davidson, the Robsons and the Watts and many others have built up he Shorthorn trade in Canada. Many f the best show things that the United States has been exhibiting at he State and national shows for ears, indirectly were bred in Canada. At the last two International shows n Chicago, Canada carried off the onor by winning the grand champion steer of the show. Canada's horthorn exhibit here will be made p of a class of breeding cattle, and ny one purchasing any of this stock ill make no mistake, as these Shortorns are known to improve with age.

Hogs will also come from Canada, oth the bacon and the lard type, as hese stockmen have followed along he lines of England in hog breeding. f we will recall to memory the great hows during the late 80s and the arly 90s on the lake front in Chicago, we will remember that for years Canada carried off the honors for the est barrow in the show with a Berkhire hog. Later, at the International hows, which Chicago holds the first week of December of each year, Canada has repeated this same work several times.

Canada leads the North American continent in sheep, and it is here where we usually have to go when we want to get the good ones. The down and the long-wool breed seem to be their pets, as it is in these breeds that they have made the greatest winnings. At the 1912-1913 International shows at Chicago, Canada carried the honor off both years for the grand champion wether of the show, with a Shropshire bred by John Campbell.

This country will also be represented in Holstein cattle, and it is in this line of breeding that they are working out the destiny of the breed. United States Holsteins have surpassed them at the pail many times, but when it comes to beauty and conformation, Canadian Holsteins are considered much better than those of this country. Two years ago, at the National Dairy Show in Chicago, a Canadian, who has made the State of Washington the land of his adoption, shipped a show herd of Holstein cattle to Chicago. These cattle in competition with the world won far more than their proportion of prizes. Their beauty and conformation carried them to the front in every class.

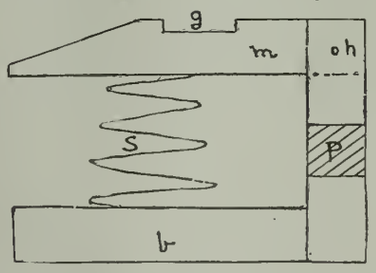
Ayrshire cattle will also be shown by Canadian breeders. At the Seattle show in 1908, the Ayrshires that received most of the winnings were mostly bred in Scotland and Canada. This winning herd was handled by a Canadian, he having bought the winning cows and bred the winning young stuff.

These few remarks regarding the Canadian breeder will tend to show our folks here what they can expect from the Canadian livestock exhibit.

D. O. Lively, chief of the Livestock Department, has been informed by many of the Canadian breeders that they will be on hand to display their goods to the world in San Francisco next year.—W. M. C.

CATCH FOR GATE.

It is an extremely convenient thing to have some simple contrivance to hold a gate open while a wagon is being driven through. Many gates stay open under such conditions because they rest on the ground and the man that opens them has to drag them along to open them and drag them along to close them again, which is far from satisfactory. A



gate ought to swing free on its hinges, and if so, it is well to have some such device as is shown in the accompanying diagram to hold it open as long and as securely as is required.

The device shown is nailed about breast high, parallel to the ground, on a post "p," which is situated at the side of the road so that the end of the gate, when opened squarely, will just brush against the movable arm "m" and move it back so that it can drop into the groove "g" and be held there. The movable arm, or front part of the device, works on a pivot "h" shown in the diagram. It is held in place by the old bedspring "s" attached to a solid arm "b" in back.

The gate on being opened slides along the front of the movable arm, pushing it back, just as the catch on a door is shoved back as the door is closed, and when the edge of the gate reaches the groove or nick at "g" it is held there until someone pushes this movable arm back and lets the gate swing closed. This catch is used on the H. N. Vennewitz ranch at Mt. Aukum, Cal.

Plenty of clean, fresh water is necessary if you want your pigs to do their best.

Never feed more than hogs will eat freely. Many farmers do not practice this, but keep a quantity of uneaten food lying about the lot at all times.

A horse exhausted and reeking with sweat should not be allowed to stand in a draft, no matter what the weather may be.

Be sure that the mare and colts in pasture have shelter from the hot sun.

Feed the pig all he can eat without squealing. This can be done only by watching him eat and knowing just how much he needs.

There is something the matter with a squealing pig. Find out what it is.

No More Hand Pumping Now!

When you start doing chores you won't have to stop long at the pump if a

Fairbanks-Morse *Eclipse Engine*

is attached to it. Your boy can easily start it. Complete instructions with every engine. Water for the stock and the household is supplied regardless of wind or weather. It's the only economical way of pumping — the only way consistent with the use of your other labor-saving machinery. You'll be surprised to find what a lot of water the ***Eclipse Engine*** pumps for each pint of gasoline used.

Do You Want Catalog No. JB 652

Fairbanks, Morse & Co.

Manufacturers of Oil Engines, Pumps, Electric Motors, Windmills and Other Machinery

San Francisco Los Angeles Portland Spokane Seattle

AUTOMOBILE ENGINEERING

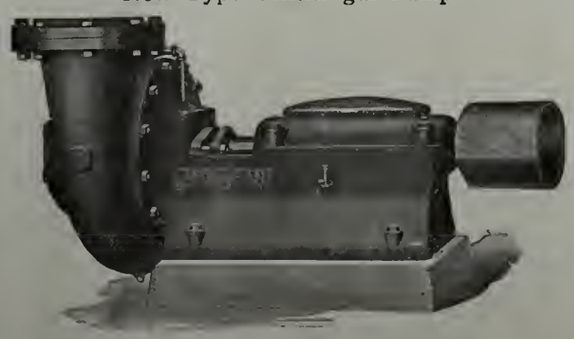
Driving, Overhauling, Adjusting, Repairing. The largest, most completely equipped and efficient Automobile School in California. Send for free catalog.

OAKLAND AUTOMOBILE SCHOOL

ENGINEERING BLDG.,

13th and Madison Streets, Oakland, Cal.

New Type Centrifugal Pump



HERE IS THE PUMP

For High Speed Motor Service

Belt-driven or Direct Connected.

NO Separate outboard Bearing.
Bearing in Suction Elbow.
Bearing in volute chamber.

Ring Oil Bearing runs in Oilbath. Drip pocket around packing gland. Extra large pump shaft. Compact and durable.

CALIFORNIA HYDRAULIC ENGINEERING & SUPPLY CO., 72 Fremont St., San Francisco

Training Stock for the Show Ring

By W. M. Carruthers

The preparation of stock for exhibition at fall shows is an important business. Little success in the showring can be expected, even with first-class stock, unless the animals have been taught to make the best of themselves when brought before the judges. An animal that has not learned to walk and stand well, or that is constantly fighting for his head or trying to break away, is likely to hide his best points and present his weakness in prominent form. The desire of the exhibitor is obviously just the opposite to this. He wants his animal to make the most of his good points and keep his faults as much in the background as possible. There is much that may be done to further this object without in any degree overstepping the line which divides fair exhibiting from dishonest faking.

Schooling Horses.

The training of a horse for show ought to start when he is a foal. The youngster can be haltered and accustomed to being led about, walking and stopping as required. This early handling is half the battle, removing many of the difficulties of the further training. Later on the youngster can be taught to move at the walk, trot or canter as required, for it is important that he should promptly assume any desired pace when called upon in the ring. A heavy horse, of course, is not required to move at a fast pace, but it is essential that he should walk and trot in easy, well-balanced style, the action being smooth and true.

When pulled up the horse should be taught at once to assume an attractive pose, with the feet set well out before and behind, though without exaggeration. It looks much better if the animal naturally falls into this position than if it does so only after a lot of shifting about by the attendant.

Action is important with all breeds and is largely a matter of breeding, but it can be encouraged where deficitut. There are various ways of teaching a horse to pick his feet up sharply, one being to use heavy shoes, and another to exercise in a heavy clay field. The greatest difficulty is experienced with a sluggard whose tendency is to slouch along. Such a horse is best taken on a long lead, the groom running before, while the judicious application of the whip by a runner-up will induce a smarter action. An active, high-spirited animal is much easier to show well, but he needs to be kept well in hand on a short lead.

Winning Clyde and Percheron Stallions Standing in Correct Form.

Training Cattle.

The training of cattle for the show ring consists chiefly of frequent exercise on the lead, so as to render them perfectly tractable. They must walk well and stand easily, without any attempt to break away from the attendant. A well-balanced walk is a natural trait, and is not likely to be produced by artificial means in an animal that is not evnly made, but a good deal can be done to make him show to the best advantage when standing before the judges. Some excellent cattle drop their backs when pulled up. This is very undesirable, as a level top goes far in the ring. Such an animal should be kept on the move as much as possible, and taught to hold his head low when at a standstill, as the defect then shows least. With cattle a good coat is an important feature. This is induced by keeping in airy quarters and by th frequent use of a currycomb an brush. With these useful instrumen and a pail of water the skillful ca tleman puts the finishing touches t his charge before entering the rin and he knows how to make the ha cover weaknesses of back and rum A great joint in showing off any an mal to the judges is to know its wea points, and to manage it so that thes assume the least possible prominenc

Sheep and Pigs.

The main care of the shepher should be to teach his charges to lea well. This can be done only by earl haltering and frequent exercise o the lead. This also helps to keep th animal sound on his feet and straigh on his legs, so that he walks well an stands square. It is by no mean easy to regulate feeding and exercis so that a sheep goes well on his fee while in high condition. Naturall the fleece comes in for much atten tion, and lends itself to the coverin of faults of form, though these com out readily enough under the han of the skillful judge. The shears mus be used frequently on the fleece as i grows, right up to the eve of th show, as a smart appearance is ex pected.

Pigs lend themselves less to train ing for show than any other stock but, fortunately, less is expected o them in this direction. They must b driven, for they can hardly be led However, a good deal can be done t make them tractable to some degre by handling from an early age.

It is little less than cruelty to ani mals to put a sore-footed horse on th road. Keep him on the farm if yo will, but never try to make a road ster of him.

It does a flatfooted horse lots o good to have his shoes taken off an be given a run of two or three week in the pasture after the season's wor is well along.

PUBLIC SALE

Registered Percheron Horses and Shorthorn Cattle

AT THE FARM OF

Wm. Bond, Mowry Station, Near Newark, Cal.

Inquiet, Imp. (79239)

On

THURSDAY

August 27th

1914

Dora D. D. 3d.

Class of Horses and Shorthorns to Be Sold

Imp. Inquiet (79239), a State Fair winner. **Newark Loyalty (84188)**, a right good one. All colts by Inquiet. All mares in foal to Inquiet.

Everything will be sold. Bargains for all.

Dora D. D. 3d by King Edward. **Greenwood Mary** by Hillcrest Hero. **Clover Leaf 4th** by Hillcrest Hero. **Maid of Gloster** by Brampton Victor. **Perfection** by Knight's Perfection. Many others by King Edward, Noble Knight, Hillcrest Hero and Knight's Perfection, four of the bulls which have made shorthorn history in this State.

Remember the date, Thursday, August 27th. Remember the place, Mowry Station, near Newark on Southern Pacific.

For Catalogue, etc., address

WM. BOND **NEWARK, CAL.**

Yolo County High School Pig Contests

By Niles P. Searls, Assistant County Farm Adviser

About the first of March, with the id of the State University Agricul- ural Club, there was organized at Woodland and Esparto, Yolo county, wo high school agricultural clubs, hese being part of a chain of clubs cattered through the State. This gricultural club movement, while ew in California, has been carried n for several years in the East and outh, where some three hundred housand boys and girls annually row crops in their spare time in ompetition with other members of he club. Any boy in the community nder the age of 18 is eligible to nembership, the boys voting on each ew member. The club conducts its wn meetings, but from time to time he county farm adviser or some rep- esentative from the agricultural col- ege is invited to talk to the boys.

After several weeks of debating he Woodland and Esparto boys lected to enter into pig raising con- ests, each member to raise a pure red pig from weaning until the time f the State Fair in September. The nimals will be shown at the county air, and a movement is under way or a special pig club class at the State Fair. The local breeders gener- usly made a price on their young tuff that the boys could meet, and he contests contain good representa- tives of the Poland China and Berk- shire breeds. One pig at the age of 13 weeks weighed 72 pounds, and the others were close behind.

At two meetings talks were given by members of the animal husbandry department of the University of Cali- fornia, and in line with the expert advise given the pigs are receiving well balanced growing rations, while proper sanitary precautions are taken in keeping clean the drinking water and feed and in regular dipping, while several animals have been immunized to cholera by vaccination.

A beautiful pig is one possessing the excellence of a pig and the Ag- ricultural Club pigs are being dis- played by the boys with all the pride of ownership.

As a spur to effort, the local Cham- ber of Commerce and business in- terests are supporting the work of the boys by a series of prizes. The rewards are based upon a definite per- centage for (a) financial profit, (b) individual merit of the animal, and (c) written essay on how the pig was grown.

The first prize is to be a trip to Washington, D. C., under the auspices of the university authorities. It is expected that the two boys from Yolo county will help make up two spec- ial cars of various contest winners from the State, the Eastern trip last- ing at least a month. The boys will visit the large experiment stations, farms, stock yards and packing houses across the continent, and may attend the National Dairy Show in Chicago. Each traveler will keep a history of the trip, which he will report on his return, to the less successful mem- bers of the club, and through the lo- cal papers to the community at large.

The second prize offered will be a trip to the Davis Farm School for all boys who successfully complete the year's contest, and here they will meet a large group of boys from the whole State who believe in the pos- sibilities of agriculture as a field of opportunity.

The pig contest is the spark that keeps interest aroused within the club, but the High School boys are taking up other agriculture topics, such as the renovation of depleated grain soil, breeds of farm animals, etc.

The Agricultural Club work should start the boys thinking along scien- tific agricultural lines, and if it shows that farming has a larger field of ef- fort than the crowded city offices, its purpose will have been accom- plished. The "hay-seed" cartoon of our American press may yet be re- placed by the American youth in his big motor car, which latter makes town so near the farm.

The pig contest has spread some two dozen highly bred animals over the farms of Yolo county and in many cases the boys' contest pig has al- ready been selected as sire for the home herd. This blood will have its effect in improving market type, and the contest should have an effect in stimulating the growing of more profitable hogs on the farm. A 225- pound hog is a more profitable ani- mal at seven months than a 150-pound individual of the same age.

Pork production in California has fallen off, due in part to the ravages of hog cholera. If the pig contest teaches the boys proper sanitation as the greatest preventive measure in hog raising, and encourages pork production in the county, it will have accomplished a big purpose.

SWINE IN CALIFORNIA.

According to figures of the United States Department of Agriculture, swine raising in California was slight- ly on the decrease April 1, 1914, as compared with that date of the year previous. The decrease was said to be due to hog cholera. Figures for recent years were given as follows: In 1910 there were 767,000 hogs in California; in 1913, 822,000 hogs, and in 1914, 797,000. The disease loss dur- ing the year ending April 1, 1914, was 42,200, more than enough to make up the difference between 1913 and 1914.

The greatest remedy or preventive for hog cholera is the anti-hog cholera serum provided at a cost price of 2 cents per cubic centimeter by the Uni- versity of California. In 1911 there were distributed by the plant 122 liters of serum, a liter being 1,000 cubic centimeters. In 1912 the distribution amounted to 933 liters and in 1913, 1,089 liters, indicating the growth of patronage by California hog raisers. The plant built and operated by the university cost $6,000, this being the sum appropriated for that pur- pose by the Legislature.

The estimated total amount of anti- hog cholera serum produced by the dicerent State laboratories in the United States in 1913 was 50,000,000 cubic centimeters, and it is probable that in addition at least 25,000,000 cubic centimeters was produced by private laboratories. Assuming that the average dose is 25 cubic centi- meters per hog, the estimated number of hogs immunized against hog cholera by the serum in 1913 is 3,000,000 head.

SHORTHORN BULLS COMING.

Recently Miller & Lux received a car of 35 head of young, thirteen- months-old, registered, Shorthorn bulls from the Middle West. These bulls were bred at one of the oldest Shorthorn farms in the State of Iowa. Twenty-five of these bulls were sired by a good, red Missie bull, he being sired by the imported bull Baron Gloster, from an imported Missie cow. A great many of these young bulls are pure Scotch and should do valuable service for the Miller & Lux people. On account of the number of Shorthorn bulls being shipped into this State each year, it seems as if there is lots of room for many new herds of registered Shorthorns. The high price of beef is practically elim- inating the grade bull, and it will only be a short time until the entire State is using nothing but registered bulls.—W. M. C.

As young pigs grow their rations should be gradually increased, as quick growth is necessary for the best profit.

INDIGO A CHOLERA CURE.

Indigo is stated by J. P. Crumley of Placerville to be a cure for hog cholera—not only a preventive, but actually a cure. This was discovered by his father in Kansas many years ago.

The way it came about was like this. A horse had the bots badly and an old lady told Mr. Crumley Sr. that a dose of indigo would cure the bots. This was tried and the indigo killed all the bots in the horse's stomach and he recovered entirely.

A year or so later about 250 hogs were being fattened on the Crumley ranch and the cholera got in, killing about half of them. No good treat- ment for cholera was known as that time and sooner than let them die the Crumleys decided to try the indigo to see if it would be as effective on hogs with cholera as on a horse with bots. The indigo not only checked the cholera, but it cured the hogs that had it, even when they were pretty far gone.

Since that time indigo has been used whenever cholera develops, much of the time in California, and has always given the best results. It is stated that it has been found excellent in preventing the cholera from entering a bunch of hogs, as well as curing it after it has started.

The indigo is ground up into a pow- der fed in a mash at the rate of a teaspoonful or a little more a dose. Sometimes several doses are neces- sary and the cure results in only three or four days. When a hog is so sick that he cannot eat the indigo can be dissolved in water and given by means of a bottle.

Put a small handful of meal in the pail of milk. The calf in licking the pail will get the meal, and after it learns to eat this way a small feed- ing box can be used to better advan- tage.

FOR SALE

Rambouillet, Shropshire, Oxford and Cotswold Rams

Also a few Pure Bred Shropshire Yearling Ewes.

After August twelfth these can be seen near Soda Springs, Idaho. It will pay you to see our rams before buying. They are the kind you want and prices are right.

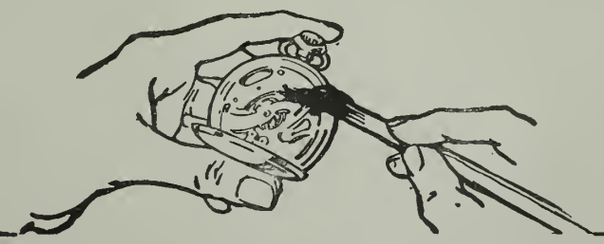
KNOLLIN & FINCH,
Soda Springs, Idaho
or
A. J. KNOLLIN,
South Omaha, Nebraska

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50

Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. ct. Use any injector, but Cutter's simplest and strongest. Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (ours or any other), as it affords less protection than fresh. Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly.
THE CUTTER LABORATORY, Berkeley, California.

Ask Your Dealer for
EL DORADO COCOANUT OIL CAKE
for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market to-day. If your dealer doesn't carry it, address
EL DORADO OIL WORKS
149 California St. San Francisco



You Wouldn't Put Axle Grease on Your Watch

Isn't it almost as ridiculous to use ordinary farm oil on your cream separator? It's delicate mechanism demands a special oil. We make good harvester and gas engine oils, but we do not recommend them for separators. If your separator is to do its best work, you must lubricate it with

Standard Hand Separator Oil

It is made especially to suit the peculiar mechanism of cream separators. It is of just the right body. It does not "gum." It keeps the bowl running swiftly and smoothly—you get *all* the cream. There is no better oil —regardless of price. Dealers everywhere.

Standard Oil Company
(California)

California Aspects of the Breeds

Shropshire Sheep

The amount of pure-bred flocks and pure-bred rams which are now being produced in the State of California, goes a long way to show that the Shropshire has become very popular in this State.

As farming cannot be successfully continued without an occasional change to grasses for the maintenance of live stock, thus fertilizing the soil in different ways, and owing to the fact that sheep make the best use of all odds and ends about the pastures, meadows, rye patches, corn with rape underneath, etc., and are the best of live stock to fertilize by their droppings, no farm, however rich in natural fertility or high in price, will give the largest net returns without a flock of sheep. Therefore the question is, "What breed of sheep gives the largest profits continually?" Shropshires are perhaps the most economical producers of mutton, giving high returns in carcass weight for food. Each pound of mutton they produce is worth more money than the coarse-grained sort from the extremely large mutton breeds. Each year the range in market price is getting wider and wider between the compact, firmly and evenly-fleshed Shropshire lambs which give quality carcasses of handy weights, and the larger rough breeds which give less dressed percentage of mutton which is also of much lower quality. From a current issue of probably the most reliable publication regarding Chicago live stock markets we quote the following:

"It must not be presumed that all lambs are realizing lofty prices. Only high dressers are equal to the performance and dressed meat percentages are closely watched. A band of shorn lambs costing $8 on the hoof actually made dearer mutton on the hooks by $1 per hundred weight than another purchase costing $8.50 alive."

Buyers for the large killers and packers are nowadays close observers of how every purchase dresses out in quality and weight on the hooks. In future years even a closer discrimination will be made against lambs which do not "kill well." Returns are being kept close tab on in order that lambs and sheep will be purchased according to their real value—no guess work about it. Notice in the market reports from time to time that medium weight quality lambs bring nearly double the price that coarse fellows with poor quality do.

When you go to the butcher's shop do you want a chunk of coarse-grained, fatty mutton? If so, you are one in a thousand, because the other 999 will want a rich, lean piece, fine as possible in quality. People nowadays know the difference in taste between the two, and place all preference for that which is fine in grain.

Lowest actual cost of production per pound of mutton and the very highest price when sold is certainly making the former indifferent sheep raisers "turn the tables" and keep the breed which is so profitable when everything is taken into consideration. Sheep raisers are also particularly noticing how much lower the annual cost of maintaining a flock of Shropshire breeding ewes is than those of any other breed.

Not only is it important to have the class of lambs which make good gains and command highest price, but it is most desirable to materially lower the cost of first producing those lambs. Ewes of other breeds require a larger amount of green food and some grain in addition, while Shropshire ewes will be nursing fat lambs and in perfect condition on a rougher, poorer pasture and without grain. Many times at the same season of the year has the writer visited breeding flocks of the Shropshire and various other breeds in different sections of both America and England, and noticed the conditions exactly as stated above.

Shropshires are easiest to keep in thrifty condition and ofttimes at practically half the cost of the upkeep of flocks of other breeds. They are naturally good feeders and exceptionally strong in constitution, having the inherent robustness of their origin from the hill breeds of the English county from whence the Shropshires breed takes its name. Strength of constitution is a prime requisite in all breeding or feeding sheep.

In the life of animals things come up as various sorts of trouble and hardship which must be withstood by the animal system, the weak constituted ones suffering to a greater or less extent under these conditions, but those with strong constitutions ward off the trouble and are hale and hearty. The strong-constituted sheep possesses the highest degree of digestive and assimilative power and even under unfavorable conditions makes most through use of all its food.

Shropshire fleeces have the greatest density in length combined, thus giving heavy weights and complete protection, altogether making what might well be termed the unequaled general-purpose sheep for the farmer and breeder. The Shropshire fleece is a perfect covering all

Grand Champion Shropshire Ram Owned by Knollin and Fitch.

For Sale

Shropshire, Rambouillet and Cotswold-Rambouillet Rams.

1,200 Head

These rams are splendid types of their respective breeds. Their sires are imported rams from the best flocks in England, Canada and United States. They are priced right in any quantity to suit purchasers.

For particulars address

D. C. Wheeler, Inc., Reno, Nevada

BREEDER OF CHEVIOT SHEEP

GEORGE PARNELL WINGATE, INDIANA

BREEDERS OF

HAMPSHIRE AND SOUTHDOWN SHEEP

CHAS. LEET & SON
MANTUA, OHIO

NASH BROS.
TIPTON, INDIANA

BREEDERS OF DORSET SHEEP

Dates of Prominent Agricultural Fairs and Shows for Fall and Winter 1914

For the benefit of readers of Orchard and Farm, we herewith give the dates of all prominent fairs and shows in Western United States for the remainder of 1914:

Sept. 8th-Sept. 10th—Yolo County Fair, Woodland, Cal.
Sept. 12th-Sept. 19th—California State Fair, Sacramento, Cal.
Sept. 12th-Sept. 20th—Spokane Interstate Fair, Spokane, Wash.
Sept. 21st-Sept. 26th—Montana State Fair, Helena, Mont.
Sept. 28th-Oct. 3d—Oregon State Fair, Salem, Ore.
Sept. 29th-Oct. 2d—Wyoming State Fair, Douglas, Wyo.
Sept. 29th-Oct. 3d—Fresno County Fair, Fresno, Cal.
Oct. 5th-Oct. 10th—Utah State Fair, Salt Lake City, Utah.
Oct. 5th-Oct. 10th—Kings County Fair, Hanford, Cal.
Oct. 14th-Oct. 17th—California Dairy Show, Modesto, Cal.
Oct. 22d-Oct. 31st—National Dairy Show, Chicago, Ill.
Nov. 9th-Nov. 14th—Arizona State Fair, Phoenix, Ariz.
Nov. 28th-Dec. 5th—International Live Stock Exp., Chicago, Ill.
Dec. 7th-Dec. 12th—Pacific International Live Stock Exp., North Portland, Ore.

For further particulars address the secretary of any of the above meetings at the address given.

over and under the body and is bred that way not only for increased weight of wool, but for absolute protection from damp, cold weather and storms. The general farmer needs such a breed which will not be soaked to the skin when there is a cold, driving rain. These characteristics by keeping up the highest degree of thrift aid the sheep in making largest gains, thereby lowering the cost of Shropshire mutton production. On the average farm, wherever located, the Shropshire will give best possible results in the economical production of highest-class mutton.

Careful methods of breeding have placed the Shropshire breed of sheep in its present possession of desirable qualities. The greatest profits come to the best breeders. The common class of lambs does not attract the same number of purchasers as the better lot, even though the price asked for the former is much lower. This superiority can be attained only by proper methods of breeding. Although the ewe portion of the flock plays a very important part in breeding, the greatest, cheapest and quickest results can be obtained by using the highest class of registered rams. The ram makes a mark on every lamb while the ewe affects but one or two, as the case may be.

Before commencing your search for a flock-header, get it thoroughly into your mind just the sort that will do your flock the most good, and after that do not stop until you get him. If you have a grade flock and are producing lambs for market purposes, remember that the strong-constitutioned, thick-fleshed fellows top the market, and your bunch of lambs must be uniform in size, type and density of wool to present the desired appearance in the sale pen. Constitution is a prime requisite in sheep, whether they are for the breeding pen, feed lot, or show yard. The extended nostril, strong short neck, wide deep chest and well-sprung rib all indicate that the heart, lungs and digestive organs have plenty of room in which to do their proper and required work.

Get a strong-constitutioned ram, correct in mutton conformation, with a dense clear fleece, and all the size possible. The bigger the sheep the better so long as he has good quality of flesh. There is a "happy medium" which combines much size with quality—that is the right sort. It doesn't pay to raise coarse, poor feeders or those that fatten in patches, because the market doesn't want that sort, but it never pays to raise little bits of things either. Breed for all the size you can possibly combine with quality. The butcher wants the lamb which will dress out the largest percentage of natural flesh in the most valuable cuts, the back and hindquarters, and you need not think that a bunch of bare-backed, narrow hind-ended lambs would go through any leading market at the same price that the straight backed, wide, thickly fleshed sort would.

When purchasing rams remember that in addition to being the hardiest of the mutton breeds for the farmer, Shropshires are the heaviest shearers of the Down mutton breeds. The dense Shropshire fleece adds to the general thrift of the flock by affording natural complete protection from bad weather and also greatly increases the annual income. From old Shropshire flocks which have been bred for heavy fleeces, rams can be obtained which shear 15 pounds and upwards of clear white dense wool. To make the largest returns from the flock investment no ram should be used which shears less than 15 pounds per clip. A large income can be obtained from the wool by careful breeding and not sacrifice anything in mutton conformation.

Decided masculinity is required in the ram, this being indicated by general burliness of the head, thickness of the neck, and general massiveness with a bold assertive appearance. A ram with a narrow nose and head, a long slim neck, and lacking in vigor, rarely if ever, was known to be an impressive sire. If you are accustomed to purchasing a ram of the medium class, the additional $5 required for the purchase of a superior one may seem to be quite a large sum, but a small investment in this way nearly always results in a much larger future income from the flock. Those who have used good rams never turn back to using the more common class. And if you get a better ram this year than ever before, your flock will commence to make larger and better returns and make breeding more interesting.

When it comes to getting the greatest size and highest quality combined the Shropshire stands without a peer. He is naturally strong in constitution, having inherited this from his native heath. He has been known to thrive exceptionally well in all parts of the world, through extremes of wet, dry, heat and cold on both high and low lands. Under ordinary conditions Shropshires will raise a larger number of desirable lambs than almost any other breed. They are excellent nursers and the lambs are usually born strong.

Shropshires are covered all over with a heavy dense fleece of good length, insuring absolute protection from storms and weighing on an average from nine to fifteen pounds, bringing the top price on the market owing to its quality and strength. They are compact, even and firm fleshed and give the very highest dressed percentage of good carcases, the meat being lean and juicy, therefore bringing the top price. The quality of Shropshire mutton has been a main factor in raising the American mutton trade to its highest standard by offering a good product to the consumer. Altogether the Shropshire is an unequaled general-purpose sheep for the farmer and breeder.—W. M. CARRUTHERS.

SHEEP FOR SOUTH AMERICA.

On the 29th of June, the W. R. Grace Steamship Company loaded out on the steamer Santa Catalina, fifty pure bred Cotswold yearling rams, destination Callao, Peru, These rams are to be used on Rambouillet and Corridale ewes to produce mutton to supply the South American market. Along the coast of Peru and the Straits of Magellan, the climate is very mild and is adapted to the production of good mutton.

This paper has been advising livestock men in this State to breed Cotswolds, as the South American trade seems to demand this class of mutton sheep. During recent years, these Cotswolds were all shipped from England to South America, but now that they can be secured on the Pacific slope of the United States, South Americans expect to do more of their purchasing in this country. The ocean trip is much easier on the sheep from the San Francisco port than it is from the English ports around the Horn.

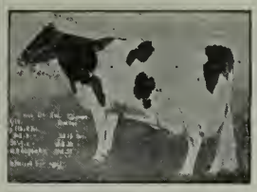
These Cotswolds that were shipped by the Grace Company a few days ago were bred by D. C. Wheeler & Co., Inc., Reno, Nevada. For a great many years, Uncle Dan Wheeler has been breeding good Cotswolds, buying nothing but the very best of rams in Canada and England to breed on his flock at Reno.

It seems to be the rule in the sheep game as well as in any other, that when one has something good to sell there is always a market for it.—W. M. C.

MANNERS IN THE COW SHED.

Speak kindly to the gentle cow, and never, never tease her;
Take off your hat; politely bow; do all you can to please her.
Be sure your hands have been washed clean; be sure your nails are curried;
More milk is drawn from cow serene than from the cow that's worried.

50 Cows Average 717 Pounds Butter



This is the average of the 50 cows that have completed yearly semi-official tests to date in our herd.

Did you ever consider what it would mean to place a young bull in your herd, bred in lines that are producing these results? It will mean increased production and value for every animal in the herd. He will produce the kind of stock that are in the greatest demand at high prices.

INDIVIDUALITY, PRODUCTION and TRANSMITTING ABILITY are essential in the choice of a herd bull. These are the qualifications of the young bulls that we offer as low as $150.00.

Engage your calf for use next fall. Your inquiries will be given prompt attention.

A. W. MORRIS & SONS CORPORATION
Holstein Friesian Cattle — Woodland, California

HOWARD CATTLE COMPANY
Breeders and Importers of
SHORT-HORN CATTLE
55 New Montgomery Street — San Francisco

A RARE OPPORTUNITY
I will visit all Eastern Fairs this year for the purpose of buying pure-bred Live Stock for California breeders. I will also personally select specimens of the different breeds for the purpose of strengthening California Herds and Flocks at the Panama-Pacific Exposition. Correspondence invited. Address
W. M. CARRUTHERS, 721 HEARST BLDG., SAN FRANCISCO

RAVENSWOOD HERD SHORTHORN CATTLE
ESTABLISHED 1839
Herd Numbers 140 Well-Bred Scotch Animals Headed by Marengo's Choice 353873, Assisted by Wood Dale Stamp, a Son of Imp. Clara 53.
CHAS. E. LEONARD & SON, Proprietors.
ED PATTERSON, Manager.
Buncetoo, Missouri.

HALLWOOD FARMS
Breeder and Importer of
SHORTHORN CATTLE
Address E. M. HALL, Carthage, Missouri.

GEORGE D. HARRAH
NEWTON, IOWA
BREEDER OF
HEREFORD AND SHORTHORN CATTLE

FOR SALE
HOLSTEIN-FRIESIAN BULLS
Five registered bulls and 4 registered bull calves.
These calves are from Eastern A. R. O. grand dams and have for sire King Seges, 2d, one of the best young bulls in the State of New York. —AND—
1,000 Unrecorded Pure Bred Shropshire Ewes and Rams.
These sheep are large and in fine condition. Can be seen near Firebough. Prices on application.
MILLER & LUX, INC. Merchants Exchange Bldg. San Francisco

The Many Benefits of Alfalfa

Prepared for Orchard and Farm

The Arabic word "Alfalfa," literally translated means "the best fodder." History proves that it has been used as such for over 3,000 years. At least one of its various varieties has been grown for this purpose in almost every country in the world, from the tropical section of Northern Africa to the cold, bleak plains of Siberia and from below sea level in parts of California to elevations of 8,000 to 10,000 feet in the Himalaya mountains. It is the oldest forage plant known to man.

Alfalfa was brought to the United States 250 years ago by the early settlers of New England. We hear of it in California over 100 years ago, coming presumably from Chile, but it was "reintroduced" into this State soon after gold was discovered. Alfalfa was a proved crop in New York State before the year 1800 and has been grown continuously ever since. There are many who claim the great advancement of the Holstein Friesian in that State is due to the feeding of alfalfa. Single fields have been continuously productive in New York for sixty years, in Mexico for 200 years and in France for over 100 years. The average life in the United States is from ten to fifteen years.

In this country it has not been thoroughly appreciated until lately. After gradually making its way eastward, it began to make an impression as to its possibilities, and California and the Pacific Coast get the credit for its introduction.

Alfalfa enriches the soil and utilizes the water supply better and to a greater extent than any other crop. The roots grow to a great depth in search of water, hence irrigation in many locations is not essential. It should be ideal for our coast dairy section. In the warmer valleys it must be irrigated.

Years of study and experimentation have been spent upon it; now any one can secure the information necessary for sure results in a day. Seed selection, inoculation of the seed or the ground, liming the soil, and the proper preparations of the seed bed bring results. Failure is due to careless methods or the neglect of one of the above rules.

Alfalfa contains the largest proportion of protein (muscle making food) of any fodder, and it excells any other in feeding value and in the yield per acre. When fed to cattle less grain can be used. It is equally good for horses, sheep, hogs and poultry.

Last year one of San Francisco's leading draymen fed 1,250 tons of alfalfa and an equal amount of red oat hay. Each horse received equal portions per day except on Saturdays and Sundays, when all alfalfa was fed. I saw a sample before delivery; small short stems, abundance of leaves, no weeds and cured to perfection. It was bought in the field, cut when just right and extra care was used in the handling.

There is a future to the use of alfalfa for horses if producers will follow a few simple directions. For horses it should be cut when in full bloom (not in the bud). That is two or three weeks later than is usually done. It should be allowed to stay in the stack at least five weeks longer than the average time before baling. This gives it a longer sweat and prevents that stickiness and matting together in the bale.

What a saving it is to the farmer with a small acreage! No plowing for six or more years and from three to seven crops, two to nine tons, per acre per year. Is it not worth the time to properly prepare the soil and follow the lines as laid down by those who know? Remember, any soil containing plenty of lime, if properly drained, will grow alfalfa.

An acre of alfalfa is equal to four acres of corn. A ton of alfalfa has the same feeding value as 1,500 pounds of oats. I repeat, no crop will t rn off as much fodder in the same space of time. It is the most profitable a man can grow.

We have just passed through a boom in alfalfa lands. The result has been somewhat disastrous, as there is more alfalfa than can be sold at a profit. The producers should sell their crops as a finished product. Replace the live stock that was sold last year on account of drought and walk the alfalfa off your farm instead of hauling it off.

E. B. McFARLAND,
Steybrae Farm, San Mateo.

LOGANBERRY EVAPORATION

(Continued from Page Eleven.)

on the table only long enough to cool. This is especially important at night, for it is then that certain moths deposit their eggs. These eggs hatch in a short time, and the larvae feed on the evaporated fruit. As these moths fly only at night and work only on the fruit which is near a light, a little care will aid in preventing wormy fruit. From the cooling table the fruit is placed in sacks in which it may be stored, although a better way is to store in bulk in a clean, darkened room. If the berries are piled about 2½ feet deep and allowed to go through the "sweat," the moisture content will be equalized; and if turned with a fork or shovel every few days, a very uniform product may be obtained.

Cost of Evaporation.

Wood	$12.00
Labor	25.00
Interest on Evaporator	7.00
Insurance	1.80
Depreciation of Building	6.00
Total	$51.80

The cost of evaporating any kind of fruit varies with the size of the evaporator, and especially with the management. Wasteful and careless methods will increase the cost very materially. The cost per pound of evaporated fruit is about 2½ cents, based on a 30-day season, with an evaporator capable of turning out 700 pounds of fruit per 24 hours. If the same building is used for prunes, the interest charges and depreciation will be cut in half, and the final cost reduced to 2¼ cents per pound.

Packing and Shipping.

For shipment, the berries are packed in fifty-pound boxes without processing, although there is at least one company that turns live steam into the evaporated fruit for a short time. This has not been thoroughly tried out; consequently little is known of its ultimate effect on the keeping qualities of the product. Some of the loganberries are sold in cartons; they are especially adapted, indeed, to that class of trade which prefers a high-class article in sealed packages.

As the evaporated Loganberry is handled to-day, there is but one grade; no attempt is made to separate the different sizes. Good and bad are mixed and sold for the same price. While, at first glance, it would appear impracticable to attempt to form grades, nevertheless, if those berries which have melted and run together could be sorted out, it would improve the appearance of the product very materially. Since in most cases such berries stick together in solid masses, it would seem possible to separate them by passing them over a screen coarse enough to allow the single berries to pass through. By eliminating all scorched and burned berries and by using care in harvesting a fairly satisfactory standard can be established.

PRUNE GROWING

(Continued from Page Four.)

terior than in the Santa Clara Valley, prunes ripen later. Prunes also often kind of shrivel at the final ripening stage, rather than enlarge, especially if it is very hot, for heat makes the difference. Some claim that this can be largely overcome by sufficient irrigation. However that may be, although Santa Clara prunes are usually given a shade in price over other prunes, the prune is jumping ahead in popularity in dozens of counties, and deserves to.

There never was a time when things looked so bright. Half a dozen years ago prices were bad and a surplus was piling up nearly every year. The last few years we have averaged up as good prices as at any time, prices have been more than satisfactory, and the surplus is gone completely. The crop this year is much less than it should be, but considering the fact that every fruit has its ups and downs is very good, and prices are wonderfully fine.

The European market has advanced by leaps and bounds and the Panama Canal, by putting the prunes in European ports well before Christmas, in good condition, at moderate expense and on definite schedule, is said by the trade to give opportunity for far more than present sales (which now about equal production). Meanwhile there is the vast domestic markets to supply with a product that everybody knows. This outlook is nothing if not rosy.

Unlike other rosy outlooks, this is not accompanied by heavy prospective production. There are hundreds of old trees to tens of young ones. Orchard after orchard has seen its best days and will be removed before new plantings reach their zenith. Production can and will continue to increase steadily and with right orchard methods can increase rapidly, but the decrease from old orchards and the expanding markets give this old reliable fruit a standing and a future that makes it one of the safest and best of our California products.

HOPLAND STOCK FARM
Registered Shorthorns, Shropshire Sheep, Berkshire Hogs, Holstein-Friesian Cattle, Hungarian Ponies, Poultry.
HOPLAND, CAL.

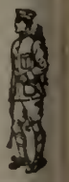
QUALITY
BERKSHIRES
OUR BERKSHIRES ARE NOW BETTER THAN EVER.
They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.
Send for Catalog.
Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

OHIO IMPROVED CHESTER WHITE SWINE
A few pigs of both sexes ready to go out the first of August. Four March boars left. Nothing else to offer at present. All stock Cholera Immune. Crated and registered free.
C. B. CUNNINGHAM,
MILLS, Sacramento Co., Cal.

BINDER ATTACHMENT with corn harvester cuts and throws in piles on harvester or in windrows. Man and horse cut and shock equal with a corn binder. Sold in every state. Price only $20 with fodder binder. J. D. Borne, Haswell, Colo., writes: Your corn harvester is all you claim for it; cut, tied and shocked 65 acres milo, cane and corn last year." Testimonials and catalog free, showing pictures of harvester. Address PROCESS MANUFACTURING CO., Salina, Kansas.

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT, with List of Inventions Wanted and Prizes offered for inventions, sent free. PATENTS ADVERTISED. FREE
WANTED—NEW IDEAS
Send for our list of Patent Buyers.
VICTOR J. EVANS & CO., 836F, Washington, D. C.

Sugar Valley Shropshires
Are Not SURPASSED for QUALITY by Any FLOCK in AMERICA
I ALWAYS HAVE ON HAND choice flock headers, breeding ewes and choice show stock that cannot be surpassed in quality at the prices I ask. In my flock runs the Best Blood of the Best English Flocks. IF YOU ONCE BUY OF ME YOU WILL ALWAYS BUY. Come and see my flock; it will please you. My farm is easy to reach from Chicago. If you want first-class Shropshire Sheep write me before buying at extravagant prices.
I won Champion Ram, First on Pen of Ewe Lambs and First on Flock at the last International Show with stock of my own breeding.
L. KAMMERER, Proprietor, BRODHEAD, WIS.

Sale of Army and Navy Goods
DIRECT FROM U. S. WAR DEPT.
Blankets from $2.00 to $5.00; Navy Blue Shirts, $1.75; Olive Drab Army Shirts, $2.50; Khaki Army Shirts, $1.00; Army Wool Socks, 25c pair; U. S. Knapsacks, 75c; U. S. Canteens, 40c; U. S. Rifles, $2.50; Mess Kits, 35c; Shelter Tents, $1.25. Other U. S. Army Goods to interest and please everybody.
Send for Free Catalogue. Mail Orders Promptly Filled.
SPIRO HARNESS CO., 307 Market St., San Francisco, Cal.


Make $2000.00 more per Year
You Can Make Big Money With a well machine that makes irrigating wells last and at a low cost. Demand for such wells is unlimited in California and the entire Southwest.
The best and lastest machine for this work and this territory is the
IMPROVED POWERS COMBINED BORING AND DRILLING MACHINE
Bores thru gravel, sand and clay like a streak of lightning. If rock is struck it drills thru that. Forces casings perperfectly. One man and one team can run it. You can make $1 an hour for your spare time.
Write today for catalog and EASY PAYMENT proposition.
LISLE M'F'G. CO., Dept. 1, 625 3d St., S. F.

FARMERS' CLASSIFIED MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Ancona Cockerels "FREE" — During August I will give away a number of beautiful cockerels to advertise my wonderful strain of prize winning Anconas. Write at once and secure yours. No junk; all culls have gone to market. **L. Miles, 511 West Seventeenth St., Santa Ana, Cal.**

100 White Leghorn Chickens, 5 months old, about to lay, 75c each; 4 fawn and white Indian Runner laying ducks and handsome drake, $8. **Mrs. Nutman, 295 Page St., San Jose.**

Order Mammoth Bronze Turkey eggs from largest turkey ranch in Stanislaus county, $3 per setting. Address **Crow's Landing Turkey Ranch, Box 227, Crow's Landing.**

We are making deliveries now on three-months-old White Wyandotte pullets; $8 per dozen; order now; limited supply. **Ormond Ranch, Corning, Cal.**

Petaluma Hatchery — Now booking orders for fall. August, September and October chicks are highly profitable. Send for circular. **L. W. Clark, Petaluma, Cal.**

Trapnested White Leghorns—Bargains in cockerels from heavy layers; only $1. **Arthur R. Schroeder, box 22, San Gregorio, Cal.**

Colored Muscovy Ducks—Young stock, $3-$5 each; pairs $5-$10. **Mrs. Emma F. Reid, box 54, Senter Road, San Jose, Cal.**

Albert M. Hart, Clements, Cal. (successor to Ed. Hart), Mammoth bronze turkeys and eggs for sale. (Circulars.)

Incubators, Brooders, Supplies, Smith's Universal Chick Feed. Hogan's "Call of Hen," $2, prepaid. **F. F. Smith & Co., 1006 J St., Sacramento. Circulars.**

Buff Minorca Eggs and Stock, also runner ducks and eggs, reasonable; high-grade utility stock. **Cedarhurst Ranches, R. D. No. 2, Box 1462, Sacramento, Cal.**

For Sale—Fine prize strain B. P. Rock young cockerels; fine breeding stock for next season; $2.50 each. Address **Miss F. W. Buckley, West Berkeley, R. D., Box 71.**

Sale — Trio Barred Rocks — Young cockerels, buff leghorn, silver-laced, Wyandotte eggs. **M. CARLSON, Camino, El Dorado County. Cal.**

Croley's Poultry Condition Powder is a wonderful help to your hens through the molt. Your dealer carries it.

SEEDS, PLANTS, ETC.

Spineless Cactus—Luther Burbank's 3 best hardy sorts: Robusta, Pyramid, and Competent; wonderful growers, nice, fresh slabs; each, 50c; 100, $40; 1,000, $300; cash with order. Address or call, **H. L. Bauer's Cactus Nursery, 4401 Hammell St., Los Angeles, Cal.**

Spineless Cactus—Burbank's best varieties; we guarantee all plants true to name and we have the best forage and fruiting varieties that have been produced. Send for catalogue and price list. **Los Altos Cactus Farms, G. D. Cummings, Los Altos, Cal.**

Barbank's Spineless Cactus—For cattle, hogs and poultry; green feed all the year; secure the new Burbank Forage and Fruiting varieties; send for catalogue and price list. **J. I. Jewell, Santa Rosa, Cal.**

Burbank Spineless Cactus—I have some of the best varieties of Burbank's Cactus, which I will sell while they last for $15 per 100; order early. **Jerry Williams, 402 Amador St., Vallejo, Cal.**

Spineless Cactus—Best by test. Compare prices, etc. Write **J. L. Lawson, San Jose, Cal.**

Maltese, Sicilian and Spanish Spineless Cactus. For particulars apply to producer. **C. M. Johnston, 8703 A St., cor. 87th Ave., Oakland.**

Cactus—Plant now; genuine Burbank fruiting and fodder varieties; prices reasonable. **El Dorado Nurseries, Cupertino, Cal.**

HOUSEHOLD SUPPLIES.

"We Pay the Freight"—To reduce the high cost of living, send for our Wholesale to Consumer catalogue. **Smith's Cash Store, 106 Clay St., San Francisco.**

LIVESTOCK

For Sale—43 head Holstein dairy stock, Sharples mechanical milker, separator and equipage; everything will be sold to the highest bidder August 17, 1914. Correspondence solicited; photos furnished. **Cooley Bros., Durham, Cal.**

Calves Raised Without Milk—Cost less than half as much as the milk-raised calves. Write for free book to **Coulson Co., Petaluma.**

Tamworths—The big red bacon and block hog. Send for circular and prices. **Cottle & Hobson Co., Amsterdam, Merced County, Cal.**

Mulefoot hogs are best for Pacific Coast. For information write **John Dunlap, Williamsport, Ohio.**

Registered Duroc Hogs, $15, at weaning time. Out of champion ancestors. **Ed. E. Johnson, Turlock, Cal.**

Pacific Guernsey Herd offers a few very choice young bulls. **C. S. Rasmussen, Loleta, Cal.**

For Sale—Milch goats; good ones. Young buck kid. **Geo. Langlois, Sebastopol, Cal.**

Registered Berkshires, $10, at weaning time. **M. D. Good, Mt. Vernon, Wash.**

Buy a Shetland pony for your children. E. H. Yocum & Sons, Bellota, Cal.

AGENTS WANTED

WANTED—Young man to represent us selling and listing real estate and business chances in towns north of Fresno, your chance to make big money; experience not necessary; write to-day. **Keystone Commercial Brokers, 1752 Broadway, Oakland, Cal.**

Local Representative Wanted. No canvassing or soliciting required. Good income assured. Address **National Co-Operative Realty Co., V-1605 Marden Bldg., Washington, D. C.**

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

TREES

Mission Olive Trees—For March and April delivery; will then be two years old; to be sure of getting Missions, I only plant cuttings from trees I raised 30 years ago; be sure of species before planting. Missions are considered the best. **W. A. Hayne, Marysville, Yuba Co., Cal.**

Bartlett Pear Trees—One year, 4 to 6 ft., $14 for 100; $125 for 1,000. Apple trees, 4 to 6 feet, 7 cents each. Guaranteed to stand inspection. Write for catalogue. **Southern Oregon Nursery, Yoncalla, Oregon.**

For Sale—Nursery stocks, trees and vines coming next fall. **P. O. Box 45, I. Hasuwa, 1623 West Front St., Selma, Cal.**

BUSINESS CHANCES

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

BEES AND HONEY.

It Pays to Keep Bees and raise your own honey on the farm; we can supply gentle Italian bees at reasonable prices any time; write for our free catalogue of bees, instruction books, supplies and fixtures. **Spencer Apiaries Co., box 11, Nordhoff, Cal.**

EDUCATIONAL

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

ADVERTISING

In This Department of Orchard and Farm pays in results because the ads are watched by buyers all over California. If you have real bargains to offer, the 3 cents a word rate will find you many customers.

REAL ESTATE

STRAWBERRY FARMS, ORANGE GROVES AND FIG ORCHARDS are earning profits as high as $800 an acre in Suburban Gardens, within sight of the "night lights" of Houston. Land yields proportionately well in staple farm crops and vegetables. Fertile soil, well drained, amply watered by rainfall, convenient market distance of Houston, the best market in the Southwest, with rail and water shipping facilities to all markets of the world. 10-acre tracts at low prices and easy terms. Write at once for full particulars. SENT FREE. Address **Allison Richey Land Co., 250 Carter Bldg., Houston, Texas.**

For Sale—One of the best dairy and fruit ranches in Lincoln Co., Ore.; 177 acres; 80 acres of fine bottom land, situated on the Yaquina River; plenty of out range; good market for everything raised, and best climate in State; good span of horses, 27 head of cattle, all farming tools, chickens, gasoline launch worth $400; everything for $15,000; would take house and lot in town, or might consider a few acres improved. **Chas. Severson, Toledo, Oregon.**

Victoria, Australia, Wants Settlers—Special inducements; Government land, railways; free schools; cheap irrigation; 31 years to pay for farms adapted to alfalfa, corn, grains, fruit, etc.; climate like California; ample markets; reduced passages; special excursion next November. Free particulars from **F. T. A. Fricke, Government Representative from Victoria, 687 Market St., San Francisco, Cal., Box T.**

GOVERNMENT LAND FOR LOCATION—10,000 acres fine sandy loam soil. From three to seven miles from railroad, in beautiful valley, Victorville country. Plenty of water from 60 to 150 feet. It will cost you $1.25 per acre for location. Write us for full particulars. **J. B. Sherwood, 1002 Hibernian Bldg., Los Angeles, Cal.**

Arizona Farm for Sale or Rent—280 acres (160 patented), mostly level, sandy loam, clear, water for pumping 25-53 feet; three 6-inch standard pipe wells; artesian belt; elevation 4,300 feet; best market for poultry, fruit, stockraising; price $4,500. Write for more particulars. **Chas. Saller, Bisbee, Cochise Co., Arizona.**

5 Cents an Acre Cash—Texas school land for sale by the State. You can buy good land for $2 per acre; pay 5 cents per acre cash and no more for 40 years, but 3 per cent interest. Send 6 cents postage for further information. **Publishing Co., Dept. 88, San Antonio, Texas.**

Big Farm List Free—With photos; farms in many States; farmers' bargains with stock and tools included; dairy, truck, poultry, orchard and grain lands; deal direct with owners. Their address free. **National Farm Exchange, San Francisco.**

For Sale—Chicken ranch of 11.25 acres; 6-room modern house, barn, windmill, poultry and farming equipment; horse and wagon and 1,500 chickens; 300 yards outside city limits. Part cash and easy terms. **Alex Lanoir, Magnolia Ave., Petaluma, Cal.**

For $1,500—Corner lot, 50x125 feet, with building; neat 2-chair barber shop; good shoe shop, with good business; all goes for $1,200 cash, $300 Nov. 1; good water; fine climate. Address **T. B. Stewart, Box 6, Portola, Plumas Co., Cal.**

Government land, marked plainly on county sectional map, showing roads. Easy to see and select your choice. Map circular free. Bargains. Isolated tracts overlooked. Circulars free. **Joseph Clark, Sacramento, Cal.**

For Sale—Choice residence; fruit, poultry, school, elegant view, outside city limits; fifty trains daily; printed description. Price $3,900. **Owner, Box 106, Sebastopol, Cal.**

For Sale—Small chicken ranch for 800 fowls, 200 pigeons; 25 minutes from Oakland. If desired, can cut up in lots; sell $450 lot. Terms. **P., 482 Hardy st., Oakland.**

For Sale—Five acres, part in bearing orange and lemon orchard; close in; in Government project. **Box 406, Orland, Cal.**

For Sale—Country home with two tons of fruit. **Mrs. Williams, 1796 Lexington St., Santa Clara, Cal.**

Ranches, homes, acres, lots, exchanges. Send for free list. **Wilson Bros., Santa Cruz.**

MISCELLANEOUS—FOR SALE

Building Material sale still continues; lumber, plumbing goods, electrical stock; complete house on one car. Great reductions of immense stock means your building at half price; we vacate this yard August 13, 1914; entire assorted stock must be sold; some one profits, why not you? Our complete line of building materials, new and second-hand, at our permanent address, 1501 to 1527 Market st., is now open for your inspection; costs nothing to look around, compare grade of stock with others' prices. Step into our yard, containing 2,000,000 ft. second-hand lumber and over 1,500,000 new; select your own; car lot rates; prompt shipment; satisfaction guaranteed. See these jobs:
640 Third st., Hotel Carling.
1154 Market.
2504 Washington street.
Bunkers, Fair Grounds.
Save 10 per cent on cartage; yards are already crowded; buy from the jobs, the saving is yours. Join our ranks this week; our removal cut in prices means no cartage and more room. Address new yards, 1501 and 1527 Market street.
SYMON BROS., Wreckers.

Second-hand and New Water Pipe—All Sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Second-Hand Pipe—Largest dealers in standard pipe and screw casings; prices right; guaranteed first-class. **Pacific Pipe Co., Main and Howard sts.**

RABBITS

To Make Room—50 big, mature thoroughbred New Zealand $5 does and bucks at $2.50 each; splendid stock; offer open one month. **West Coast Hare Farm, Sawtelle, Cal.**

Thoroughbred Belgians, with or without pedigrees. **The Old Hickory Supply Co., Dept. 5, San Francisco and Los Angeles.**

Belgian, New Zealand and Black Flemish Rabbits—Scored and sold on merit; catalogue free. **Caldwell Bros., Los Angeles, Cal., Box 613.**

Flemish Giants and Belgian Hares, any age; big money makers. Write for prices. **Hare and Feather Yards, 2219 Trinity St., Fresno, Cal.**

California Mission Rabbitry — Fine heavyweight Belgian and Flemish giant hares; prices reasonable. **643 Brunswick, San Francisco, Cal.**

High-grade Flemish giants. Cobrook Rabbit Company, P. O. box 354, San Jose, Cal.

HELP WANTED

Free Illustrated Book tells of about 300,000 protected positions in U. S. service. Thousands of vacancies every year. There is a big chance here for you, sure and generous pay, lifetime employment. Just ask for booklet S-939. No obligation. **Earl Hopkins, Washington, D. C.**

REAL ESTATE EXCHANGES

For Exchange—320-acre improved farm in Eastern Kansas, 96 miles from Kansas City, 2½ miles from two shipping points; deep, rich soil, no gumbo or rocks; level, all tillable, fenced and cross-fenced; good 7-room house and other improvements; $75.00 per acre; excellent farm for grain and stock; will trade for desirable California real estate, city, town or country. Will assume small incumbrance. Address for one week, **E. R. Peters, 2619 Dwight Way, Berkeley, Cal.**

I have a modern pair of San Francisco flats, clear, $7,500, to trade for 30 or 40 acres of good farm land, some fruit trees and house, not over $12,000. I will pay balance cash. **F. E. Meacham, 1410 Haight St., San Francisco.**

REAL ESTATE WANTED

Farms Wanted. We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property Free. **American Investment Association, S Palace Bldg., Minneapolis, Minn.**

Wanted—To hear from owner of good farm for sale. Send description and cash price. **D. F. Bush, Minneapolis, Minn.**

We Call Sell Your Land—no matter where located, quickly; pay no commissions. **National Farm Exchange, Oakland, Cal.**

Feeding Hens for Egg Production

By Chas. Weeks

Beginners with poultry too often feed simply a maintenance ration instead of a producing ration. Hens simply maintained soon eat to the bottom of the pocket book. A hen must have enough feed to keep alive and some over if she is to produce. Our problem is to get the hen to not only eat enough to maintain herself, but to eat enough to make some eggs, and the more we can get her to eat the more eggs we get.

The country is full of failures in the poultry business because of two things, lack of good hens and lack of a variety of feed. The amateur stocks up with hens, any old hens, buys a carload of wheat, turns his hens on a dry, barren field, feeds them all the wheat, has no money to buy more, non eggs to sell, and quits.

If we ourselves sat down to the same ration day after day we would soon die of mal-nutrition. The hen gets tired of going to that dry mash hopper day after day and finding only the same taste. She even gets tired of one kind of greens and will leave fine fresh alfalfa for kale, or beets, or green barley.

Not only does she need a great variety of feed, but a clean, sanitary place to eat it. Much feed is wasted from poorly arranged feeding troughs. A square box trough 8 inches wide and 4 inches deep and 12 feet long with a lid 4 inches above the edges of the trough so that hens can eat without getting into the trough is a good arrangement. These troughs should never be empty of green feed and the greater the varieties the better the hens lay and the less grain used. It doesn't matter what time of day the hens are fed as long as they are fed regularly and have enough to hold them till the next feed.

I like to feed green feeds extravagantly of as many varieties as possible. It is the cheapest feed in the world and gives the best results in eggs and health. With plenty of green feed and the proper grade of animal food, the mortality among the laying hens need not be over 2 per cent per annum. Some egg ranches lose as high as 20 per cent.

As a rule I prefer to feed the green feeds clear without mixing other feed with them.

As to the cost of raising green feed, that all depends upon the water supply for irrigation and the fertility of the soil. With a little water and a poor soil a man cannot make wages raising green feed for poultry. With an abundance of water and fertile soil the green feed need not cost over thirty cents per ton to produce and not over one dollar per ton laid down to the chickens.

It costs me approximately one dollar in electricity to pump water to flood one acre and another dollar for a man to tend the watering, and from this one watering we get ten tons, sometimes more and sometimes less, of green feed. Kale will make much more per irrigation. Mangel wurtzel beets has produced me 150 tons per acre in one season.

Without facilities for producing all the varieties of green feed for poultry there is not a large margin for profit, in fact, it is very small, so small that many fail to find it. With plenty of green feeds cheaply produced there is a fair margin of profit in the poultry business that makes it one of the most reliable and healthful vocations to be chosen.

The next important element in the ration of the laying hen is animal food. It has been proven beyond doubt that a hen is a meat eating animal and must have animal food to give best results. If we had plenty of skim milk this question would be solved. I consider skim milk fed in curds and mixed with ground grains one of the best foods for poultry. It fills every want for animal food. We cannot all get skim milk for the hens and the next best way to get animal food is to grow worms in the poultry yards with irrigation. It is surprising how much animal life can be grown to the square foot with a straw mulch and plenty of water. A lot 60 feet square will grow enough animal food for 600 hens if properly mulched and watered. Two lots 60 feet square each and alternated will almost keep the hens on green pasture, besides providing the animal food. This seems like a fairy tale, but any who doubt can see this proven out on my own ranch and is the climax to ten years' experimenting.

As to grains and mill feeds, feed as much as the hens will eat after they have had what animal and green vegetable food they will consume and they will never eat too much. Do not feed the grains in a stale, dirty, dusty litter and make the hens raise a cloud of dust to get it. Better feed it in troughs than all this bad air. Colds and roup are the effect of bad air and dusty air. In this country the litter should be outside the house most of the year. I keep dry feed made of a variety of ground grains before the fowls all the time and feed a variety of grains each evening, usually preferring to put it in the feed troughs so that they will get it clean. My hens get their exercise scratching in the moist, irrigated yards outside.

Exercise is essential to the laying hens, but must be in the open except in the rainy season. Hens compelled to exercise in a dusty scratching shed will never come to their best. If we ourselves should remain in a dusty scratching shed while the hens are kicking up a dust, we would soon turn to dust along with the hens. We throw the grain and get out holding our nose as we do so. Keep the dust down in the poultry house, keep it down by spraying with stove oil and crude oil mixed half and half with a pint of crude carbolic to three gallons of the mixture. This will disinfect and keep the dust down. It is the best and most lasting disinfectant that I can find.

Green alfalfa, kale, beets, green barley, corn, turnips, cabbage, etc., with a variety of grains and mill feeds, and above all a good quality of animal food, and if the hens are bred right, they will pay. There are more hens lost each year by poor quality of commercial beef scrap than any other source. Commercial beef scrap should be thoroughly cooked before using. Too many hens are poisoned from beef scrap.

Good hens with a good variety of feed regularly and plentifully fed will fill the egg basket and leave a profit above their feed bills of from one to two dollars per hen, according to the man behind the gun.

PACKAGE EGGS SOLD.

Most of our readers are familiar with the fact that the poultry raisers of Sonoma county have organized the Sonoma County Poultry Producers' Association to market their eggs in a way to get the highest possible price, the association having a contract with the Fred L. Hilmer Company of San Francisco, which pays two cents less than quotation price for eggs, but never less than 21 cents a dozen. This association in order to develop a reputation for quality of eggs is attempting to build up a trade for eggs in cartons of which the "Retail Grocers' Advocate" of San Francisco says:

"The success of package goods made in other lines is now being adapted by the Sonoma County Poultry Producers' Federation under the selling name of 'Everbest Eggs.'

The product of the poultry farms of Sonoma county is being packed in neat and attractive cartons, oblong in shape, into which one dozen large clean, white eggs are packed. The package is sealed and made air tight in Petaluma by the producers' federation. In this way the choicest eggs of the greatest egg producing county in the United States are being put on the market in a manner which pleases both retail grocer and consumer.

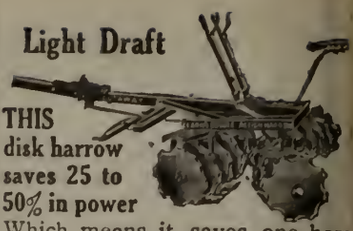
"One of the strangest features of this new diversion in maretking the most popular order at the breakfast table and that which will please the retail grocers most is the making of a weekly fixed price for grocer and consumer, which will put the 'Everbest Egg' is a class by itself.

"An attractive advertising campaign is being started, and from all reports this improved plan of selling eggs will be decidedly popular to the retail grocer and consumer."

Don't neglect to provide abundant shade, plenty of green range and a constant supply of cool, fresh drinking water during the hot weather.

If good beef scraps cause looseness of bowels in hot water, scald the scraps and mix with a good fresh ground, sound grain mash mixture, Supply fresh green range frequently or supply abundant succulent greens.

Light Draft



THIS disk harrow saves 25 to 50% in power

Which means it saves one hors at the very least. It also save one man. And, furthermore, th

Cutaway (CLARK)

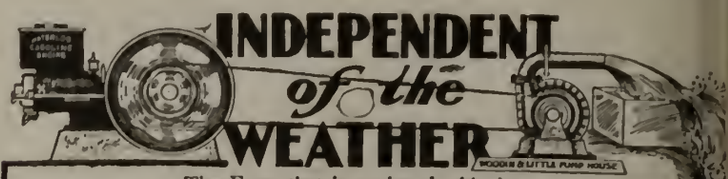
Double Action Disk Harrow

pulverizes the soil finer than any single harro working in "half-lap." And more—it pulveriz finer than any two single harrows attached tandem. Its rigid main frame holds the re disks so that they cut just midway between whe the fore disks cut. All soil is pulverized to t full depth to which the disks are run. Ask yo dealer to show you a CUTAWAY (CLARK) Doub Action. If he doesn't sell CUTAWAY (CLAR harrows, write us. Don't accept a substitu We ship direct where we have no agent. A for free catalog, "*The Soil and Intensive Tillage.*

The Cutaway Harrow Compan

Maker of the original CLARK disk harrows and plo

996 Main Street Higganum, Con



The Farm that is equipped with the

Waterloo Boy Engine AND THE Woodin & Little Horizontal Centrifugal Pump

is not at the mercy of the weather. No matter how hot, cold or dry it may be, no matter what the conditions, this engine and pump will work steadily and well. And backing up the long and continuous service which this pump and engine will give is the intelligent and cheerful personal service which the Woodin & Little Pump House extends to all its customers.

Whatever is needed in the pump line you may be sure we have it. Whatever is purchased from us you can rest assured is of the highest quality.

Those wishing detailed descriptions of the pump and engine here illustrated together with catalogue of the big line of

Pumps for Every Service and Use—Gasoline Engines—Wind Mills—Pipe-Casing—Fittings—Brass Goods, etc.—can have it free of charge. Address:

WOODIN & LITTLE—PUMP HOUSE

33 to 41 Fremont Street San Francisco, Cal.

We carry the largest line of Pumps in the United States.

Call upon your nearest dealer for our proposition.

Protect Your Chicks

White Diarrhoea is fatal and very contagious. It attacks chicks the first five weeks and kills 60 to 75 per cent of all chicks hatched. May wipe out your whole hatch. Save your chicks by putting in their drinking water

CONKEY'S White Diarrhoea Remedy

Chicks drink freely and doctor themselves. Don't take chances on losing your whole hatch. Keep Conkey's White Diarrhoea Remedy on hand as an effective treatment and preventive measure. Prices 25c and 50c.

Lice Eat Poultry Profits

Lice are responsible for many poultry diseases, poor egg records and great loss of profits. You can get rid of them quickly by dusting your fowls with

Conkey's Lice Powder

A combination of effective lice killing ingredients. Use it on setting hens now, because it Kills the Lice—Doesn't harm Chicks. Price—15 oz., 25c; 48 oz., 50c.

Spray your poultry house and paint the roosts with

Conkey's Lice Liquid

Thoroughly wipes out these pests that prey on your chickens at night. Qt., 35c; Half Gal., 60c; Gal., $1.00.

Guard your chicks against the deadly head lice.

Conkey's Head Lice Ointment

Kills them every time—doesn't harm chicks. 10c and 25c.

MONEY BACK IF NOT SATISFIED

Ask for Conkey's Practical Poultry Book—IT'S FREE

If your dealer cannot supply you, write direct to THE G. E. CONKEY CO., CLEVELAND, OHIO.

Factors Influencing Size of Eggs

The Maine Agricultural Experiment Station has done some excellent work on scientific poultry problems and recently added to other work the publication of results from a series of investigations on "Factors Influencing the Size, Shape and Physical Constitution of the Egg of the Domestic Fowl." On account of the strict grading of eggs in modern markets for size, color and shape the subject of the bulletin is of great importance to all producing eggs for sale. Following we quote from an abstract of the bulletin. The bulletin will be sent on receipt of ten cents to non-residents of Maine from the Agricultural Experiment Station, at Orono, Maine.

It is evident that the percentage of the eggs which grade as "firsts" is of great importance to the poultry keeper. Not only does he aim to produce as many eggs as possible, but he also should aim to have these eggs uniformly of the size, shape and color demanded by his market. He should, therefore, choose a pure breed of good laying fowls which produce eggs of the desired type. Yet even such a flock seldom produces anywhere near 100 per cent "firsts." If the percentage of high grade eggs can be increased without decreasing the number of eggs produced the profit will be correspondingly increased. The control of the quality of the eggs produced other than the freshness, which depends upon methods of management of the flock and handling the product, must depend on a knowledge of the factors which influence the size, shape and color of the eggs. Up to the present time very little has been done in the way of studying the biological basis of these characters in eggs.

Difference in Fowls.

The investigation was conducted on a small flock (22 hens) of "pure bred" and "line bred" Barred Plymouth Rocks. It showed that in every qualitative character studied the eggs of each individual were more like each other than they were like the eggs of other individuals. The eggs of one of the individuals were from one-fourth to one-third larger than the eggs of some of the other individuals. Some birds uniformly laid eggs which were long and narrow while the eggs of others were short and broad. The eggs of some individuals were distinctly pointed while those of others were not. The individuality of the several hens was expressed also in the weight and proportion of the yolk, albumen and shell in their eggs. In general, when the eggs of a hen are large they are both long and broad, and contain a large yolk and a large amount of albumen and shell. The yolk, however, is not proportionately large, so that hens which lay large eggs lay eggs which have a small percentage of yolk.

Although the eggs of each hen were much more like each other than they were like the eggs of the others, they were never identical in any of the quantitative characters. The eggs of some hens were, however, very much more uniform in all respects than the eggs of other members of the flock. Also the eggs of each hen were more uniform in respect to certain egg characters than in respect to others.

Age of Hen.

The eggs of the pullets which began to lay in the fall increased rapidly in size up to the beginning of the first breeding season. From that time on to the end of the second laying year the weight increased continuously, but at a slower and steadily decreasing rate. The first eggs of a very young pullet (three months old) were very much smaller than the first eggs of the birds which were two and one-half to four months older when they began to lay. The first eggs of pullets which did not lay until spring were equal in size to the eggs produced at the same season by birds which had laid during the winter. The size of the egg of any bird at any season was independent of whether or not she had been laying continuously or in fact of whether or not she had ever laid. It is, therefore, certain that the size of the egg is related to the state of maturity of the bird and is not affected by "practice" or "experience" in egg production.

Eggs From Sick Hens.

A bird in this flock developed a chronic digestive disorder which finally stopped egg production. She had been in normal health during her first year and her eggs had increased in size in the normal manner. Her eggs began to decrease in size before she showed signs of being sick. The decrease, however, became more rapid after she was known to be sick and was continuous and increasingly rapid for five months before she stopped laying. After this the hen's condition became constantly worse, until she was killed about a month later.

Position in Litter.

Through the warm months a hen typically lays a litter of eggs and then wants to sit. If not allowed to sit she will after a week or two lay another litter and again become broody. When the birds are laying in litters separated by broody periods there is a tendency for the eggs to increase in size and also in frequency from the beginning towards the middle of the litter, and then decrease in both size and frequency toward the end of the litter.

Frequent Eggs Small.

Even the very best laying hens did not produce an egg every day for any great length of time. An egg was produced every day for several days and then there followed one or more days in which the bird did not lay. A bird was usually unable to maintain the size of the egg during a period when she was laying every day. As a general rule, the eggs produced on successive days show a decrease in the weight of each part. This decrease is more certain and greater in amount in the weight of albumen than in the weight of yolk or shell. After one or more days on which no eggs were laid each egg part, but especially the albumen, was heavier than in the last egg of the preceding series.

The shape and size, and the weight and the proportion of the yolk, albumen and shell of a hen's egg depend: (1) upon the individuality of the hen that laid the egg; (2) upon her age and state of health; (3) upon the season of the year when the egg was laid; and (4) upon the position of the egg in its clutch and litter.

Practical Bearing.

The results of this study offer some suggestions to the poultryman who wishes to improve the quality of his product in respect to size and uniformity. He should start with a vigorous, good laying pure strain, which in general produces eggs of the desired type. He can then increase the uniformity of his product by selecting individuals which lay uniform eggs of the size and color desired. It is also probable that he can increase the number of such individuals by breeding. There are now being carried on at this station investigations regarding the inheritance of egg size, shape and color. The results of these studies will be published when completed.

Canvas

Irrigating Hose

Awnings, Wagon Covers

Fruit, Nut and Bean Sheets

Tents

Grain Bags and Twine

Write for Free Catalog and Discounts

W. A. PLUMMER MFG. CO.

37 Front Street San Francisco, Cal.

Get Your Canadian Home from the Canadian Pacific

BUY an irrigated farm where you have insurance against drought and where you have just the moisture you need *when you need it*. You know the value of controlling the watering of your crops. In sunny Southern Alberta you are master of the moisture. The Canadian Pacific's great Irrigation Works *insure* your yield whenever rainfall is insufficient. Irrigation is not always a necessity—but it is yours at command. It means dependable crops, and wonderful crops every year. The Eastern section of the Canadian Pacific Irrigation Block East of Calgary is now open. Virgin soil of famous fertility—alfalfa, timothy and other fodders—raises all the grain and root crops, fine climate—great cattle country—good markets—unexcelled transportation.

We want the alert enterprising farmers who see this magnificent opportunity. So we make the most liberal terms. Take 20 years to pay. Call on us for long time loan of $2000 for farm improvements if you want it. Investigate now. This block will soon be the most densely populated and intensely cultivated district in the west.

You Can Have 20 Years to Pay

We will sell you this rich, irrigated, Canadian land for $35 to $75 an acre. You need pay only one-twentieth down. Think of it—only one-twentieth down, and then the balance in 19 equal annual payments. Long before your final payment comes due, your farm will have paid for itself over and over again. Many good farmers in Western Canada have paid for their farms with one crop. Here are some of the startling features of the most remarkable land offer you have ever read:

We Lend You $2,000 for Farm Improvements This offer of a loan up to $2,000 is for farm development only, with no other security than the land itself, and shows our confidence in the fertility of the soil and in your ability to make it produce prosperity for you and traffic for our lines. This loan will help you in providing buildings, fencing, sinking well and breaking, and you are given twenty years in which to fully repay this loan. While enjoying the use of this money, you pay interest at only 6%.

Advance Live Stock on Loan Basis The Company, in case of the approved land purchaser who is in a position and has the ability to take care of his stock, will advance cattle, sheep and hogs up to the value of $1,000 on the basis of the settler's note with interest at eight per cent, to enable him to develop more rapidly, on the right basis of mixed farming.

Farm Made Ready by Experts if Desired If you want a place already established, select one which our Department of Agricultural Experts has developed. On our improved farms, house and other buildings are up, well is dug, farm fenced, fields cultivated and in crop. All waiting for those who want an immediate start and quick results—all planned and completed by men who know—our own agricultural experts. Take twenty years to pay if you want to. We give *free* service—expert service—the valuable assistance of great demonstration farms, in charge of agricultural specialists employed by the Canadian Pacific for its own farms. This service is *yours*—free

Water Rental Will Not Exceed $1.25 Per Acre

Each water agreement will have approval of Dominion Government. Lands are located on or near established lines of railway. First payment of irrigated land is 1-20th of purchase price. At end of first year no payment is due on principal or water rental, only payment of interest is required. At end of second year, no payment of principal is required, but purchaser will be required to pay interest and water rental. At end of third year, the second payment of principal, interest and water rental will be required. Here is where your opportunity lies. Don't delay. Mail coupon here at once. Best land will be taken first—time is precious to you. Write to-day.

R. S. THORNTON, Colonization Agent
Can. Pac. Ry. Colonization Dept.
112 W. Adams St., Chicago, Ill.

IRRIGATION FARMING IN ALBERTA

R. S. THORNTON, Colonization Agent, Canadian Pacific Railway, Colonization Department, 112 W. Adams St., Chicago

Please send me your book of information on Irrigation Farming in Sunny Alberta.

Name .....

Address .....

Town .....

State .....

Influences of the Poultry Show

By Charles R. Harker

Public interest in poultry as a business proposition may be said with entire truth to have sprung from the first poultry show. It was given on historic Boston Common in the city of Boston away back in 1850. Previous to that time people generally had looked upon hens merely as something which, when looked after by the farmer's wife, returned a few eggs in the spring, and as chickens have from time immemorial been a table delicacy, they were regarded with high favor by the men of the family when well cooked for the Sunday or holiday dinner. But it was considered no man's business to look after poultry, until the poultry show came along and with it the poultry fancier.

In order to attract the attention of the public to poultry as livestock worthy of a man's care and consideration, it was necessary for the fancier to take hold of it and demonstrate that there is a wide difference between the mongrel fowl and the pure-bred. So before the holding of the first show, feathered monsters that could eat off the head of a flour barrel and excited wonder by their enormous size, were imported from England and other countries by the fanciers of that day and the fact was advertised far and wide that breeders of such stock reaped a rich profit. People then, as now, were most eager to make money rapidly and they came to the poultry show in crowds, bought stock and eggs, became fanciers, as we know the term now, set about improving the breeds then regarded as the best, began very soon to experiment with new varieties, poultry of the improved sort sold at fabulous prices, eggs went up to ten dollars and twenty dollars per setting, stock soared correspondingly high, and the common barnyard hen was looked upon with scorn, as deserving of nobody's attention except, perhaps, that of the farmer's wife, whose pet she had always been.

From this boom, which was in some respects ridiculous and soon subsided, nevertheless grew the interest in fine fowls; it increased right along, year after year, with resultant poultry shows, until the civil war wiped out all interest in everything of the sort, and the fancier became either a soldier or a supporter of one.

After the war, the poultry show and the poultry fancier came to life again and rapidly the interest grew until it reached its present size, where poultry breeding is one of our most important industries, not only worthy of a grown man's attention, but something that States and national government consider valuable enough to warrant the expenditure of much money in promoting. It also has become generally recognized that the thoroughbred fowl is the only one worth serious attention, the only one that a real poultry breeder cares to bother with. He may style himself fancier, or utility poultry keeper, yet the fact remains that the poultry show is the only place where what he produces may be seen by the public at large, and where the poultry breeder occupies a position worthy of the great industry which he represents.

While very necessary things, the ordinary egg and poultry markets of our cities are not very attractive places, nor is the occupation of the poultry keeper who cares nothing for the looks or quality of his stock one that invites the average man or woman to engage in it. But the poultry show, when well conducted, is not only pleasing to the eye, but is a a demonstration of the most attractive sort of what the poultry breeder has accomplished in the season's efforts.

Therefore, almost without exception, every real poultry breeder takes a lively interest in the poultry show, if he is enough interested in his business to stick to it any length of time —which brings us to the brief consideration of our own show, to take place in October next.

For ten or more years past, the fair Santa Clara valley has been well advertised by its annual poultry shows, given by this association. I could point to dozens of cases where this sort of advertising has led to most desirable additions to our population, the attention of the newcomer, as he has assured me, being first attracted to the valley by the fact of such fine poultry shows being held here. This is in itself, where every section is doing its utmost to induce strangers to locate there, sufficient reason why we should all work earnestly in behalf of our annual show and endeavor to see that it does not suffer by comparison with those held elsewhere in the State.

The coming season of 1914-15 will doubtless be the banner one for poultry shows ever seen in the State. San Jose starts the procession, and it is up to the members of the Santa Clara Valley Poultry Association to set a high standard for those that are to follow it. Each member from this time forth should plan to exhibit every good bird he possibly can, and to induce others to do likewise. In this way the entry of poultry from the valley will demonstrate as nothing else can that we have not gone backward in poultry culture, but still keep the position we have long enjoyed of producing some of the best fowls of the various breeds to be found on the Pacific Coast, and it will be taken for granted that with many Easterners this will count heavily in our favor during the exposition year of 1915, when we expect so many strangers to be with us and see with their own eyes what we are doing and what sort of a country we occupy out here in the Golden State.

(The above is an address delivered by Charles R. Harker, show secretary of the Santa Clara Valley Poultry Association, at a recent meeting of the association. It can very well be used as an exhortation before all poultry associations for the show season directly before us.—Editor.)

FEEDING PROBLEM

The following question was printed in the July issue:

I should like to know what would be considered a fair average cost per head (either weekly, monthly or yearly) of laying hens on an egg farm where the farmer grows his own alfalfa and kale, and also the cost where he had to buy all his green stuff. If you could get the opinions of some of your readers on the subject I am sure it would be very interesting to others besides myself.—F. F. W., San Francisco.

Answer by Charles Weeks.

In reply to the above letter will say that where all the feed is purchased, including green feed, it will cost about one-half cent per day to feed a hen. This makes it near $1.80 per year. If one grows his own green feed, it will cut the feed bill down to $1.20 per hen per year. If skim-milk is fed along with all the green feed the hens will eat, then the feed bill will be cut in half or more, and the increase in eggs will make a handsome profit. With greens and milk it is as easy to make a profit of $2 per hen as fifty cents without them. In fact, the profit is so small without green feed that it is useless to attempt egg-farming without it.

Robert A. McHenry, proprietor of McHenry Poultry Yards, Modesto, also sends in the following very detailed statement of feeding costs, which will be greatly appreciated:

I note in reading your July number of Orchard and Farm that F. F. W., San Francisco, wishes information in regard to the cost of feeding a hen, either by the month or yearly, when the owner grows all green foods.

Inclosed please find records as kept by the McHenry Poultry Yards for the year of 1913, respectfully submitted to your paper and readers thereof.

Cost per hen in flocks of 200 (all green food grown) for either:

	Day.	Month.	Year.
Wheat	$1.15	$35.00	$420.00
Beef scrap	.06	1.90	22.50
Egg mash	.26	8.00	96.00
Charcoal	.01	.35	4.20
Oyster shell	.03	1.00	12.00
Totals	$1.31	$46.25	$554.70

This equals $0.073 per hen for a day; $0.23 per hen for a month, and $2.77 per hen for a year.

The laying hens are fed the best of all feeds, so these are probably higher figures than the average. Nevertheless, it will convey an idea of what the cost would be anyway.

The following is the record of the pens of 500 for one year. Note that it does not cost as much per hen in large flocks as in small on an average for a year.

	Per Year.
Wheat	$ 832.50
Beef scrap	44.00
Egg mash	189.00
Charcoal	7.40
Oyster shell	22.50
Total	$1,095.40

Or $2.19 per hen per year.

It might be of some interest to your readers to know that all the above feeds are fed in hoppers, and are before the hens at all times. The wheat is in the Gellet Automatic Feeder and they eat it as they wish.

STUMBLING FOWLS.—I have raised chickens for years and now I have a different trouble than I have ever had with my hens. They eat heartily and when they start to run their front part drops to the ground and they turn over. They don't get sick. Please tell me what the trouble is.—MRS. D. C. LORELLA, Oregon.

Answer by Prof. J. E. Dougherty, University Farm, Davis.

We should have to have more detailed information, both as to symptoms and methods of handling before we could reply to this question intelligently. The trouble may be due to pendulous crop as a result of overdistension. The only thing we can suggest with the present meager information is to feed more sparingly and eliminate the affected birds as fast as possible. The main point is to find the cause and eliminate it, so that no further trouble will be experienced.

POULTRY SHOW DATES

The third annual exhibit of the San Mateo Poultry Association will be held in Redwood, November 12 to 15. All communications relating to the coming show should be addressed to Fred West, box 701, Burlingame, Cal.

The annual poultry, pigeon and pet stock show of the San Francisco Poultry, Pigeon and Pet Stock Association is to be held in the Auditorium, San Francisco, from December 8 to 13.

The Pacific Pet Stock Association and the California Pigeon Club are now negotiating to hold their exhibition in conjunction with the San Francisco show. This exhibition is expected to give a line on the expectant winners at the 1915 poultry and pigeon show to be held in connection with the exposition.

At San Jose from October 7 to 10 there will be held the combined shows of the Santa Clara Valley Poultry Association, the Pet Stock Association, the Cat Club and the Kennel Club of San Jose. Each will be a separate and distinct show, but all will be held at the same time in one auditorium. The show secretary, Charles R. Harker, states in a letter to "Orchard and Farm" that there are larger poultry shows and larger pet stock shows, but none that compare with it as a combination of several shows in one.

LIVESTOCK

Have You Livestock You Want to Sell?

BREEDERS —AND— OWNERS

Do You Want to Buy Livestock?

ORCHARD AND FARM keeps in close touch with the breeders of pure-bred stock on the Pacific Coast, and it offers you co-operation in your efforts to

Build Up Your Herd

or to dispose of your surplus stock.

Livestock is the life of the farm. Orchard and Farm gives you valuable hints in every issue on its care and management. Our new livestock folder will be sent free on request. It contains something every farmer and breeder should know.

Address Livestock Department

ORCHARD AND FARM

Hearst Building **San Francisco**

Epistles of an Automobile to Its Maker

By Thomas Howard—Epistle II

1—This is now, my Factory, the second epistle I write unto you, for I would stir up in you a sincere approval in my design.
2—Said John Spark-Jones unto her whom he called wife, on the morrow of the day he purchaseth me:
3—"To-day shall we drive to the country that thou mayest gain pleasure from mine investment."
4—Therefore Maude Spark-Jones, who was changed from a Stark to a Spark over-night, seateth herself in the seat by her spouse.
5—And he throweth in the switch and retardeth the spark, which is instruction one.
6—Requesting his wife to alight so he may crank the engine, in accordance with instruction two.
7—They return to their seats and he advanceth the spark, which numbereth instruction three.
8—And I roar in my racing, so he retardeth the spark, lest some untoward thing affect mine mechanism.
9—Now he releaseth my clutch, throweth mine gear into low, as it is writ instruction four.
10—But he letteth mine clutch jump back, which killeth the engine.
11—And remembereth instruction three, so advanceth the spark and getteth out to again crank up the engine.
12—And I start with a forward motion, for mine gear is in low.
13—So his wife shouteth and he nimbly jumpeth, whilst I fetch up with my front fender entangled in a tree.
14—Thus its beauty is marred.
15—Should envious neighbors smile and offer cheap advice as John Spark-Jones explaineth to Maude Spark-Jones, the gas and the spark and the low be mixed in the manner of their operation.
16—And she taketh the book of instructions and readeth. It is well the beginner controlleth nervousness, which produceth mistaken endeavor.
17—For misdirected endeavor causeth many calamities to the automobile drivers.
18—So she leadeth him to his seat and saith: "Repose thineself whlist I investigate the writings of the book.
19—"Then will I instruct thee in the proper manipulation of the thing, for thou forgettest the rudiments of driving in thine nervousness."
20—Thus it came to pass the words of Solomon proved true which saith: "Whoso findeth a wife findeth a good thing."
21—For he guideth and driveth me in proper dignity until we arrive at the grade of San Juan.
22—And mine engine loseth its momentum at the steepness of the hill.
23—So he said: "Woman, give unto me the proper instruction, lest the thing cease in its kerchunking."
24—But the book of instruction spake not of such an emergency.
25—Therefore, in that the grade grew steeper, mine engine quit in overwrought endeavor.
26—And we started back.
27—The same gods which protect the suckling babe and drunk protecteth the auto beginner.
28—So we back to the up bank of the grade, and John Spark-Jones placeth his foot on the brake and setteth the emergency.
29—Then doth John Spark-Jones get out to crank me, but my crank turned not, for my gear is in high.
30—Spake Maude Spark-Jones: "Here, Mr. Jones, we stay, for the instructions cover not this emergency, and I trust not thine ingenuity."
31—Therefore we stayed.
32—Presently an auto cometh along with a seasoned driver, who extricateth me from mine dilemma and driveth me to the top of the hill.
33—And he leaveth me with a proper instruction to descend the grade on compression, using emergency and foot brakes at need.
34—But John Spark-Jones needeth the brakes, for he dareth not remove his hands from the wheel to throw out the switch.
35—And Maude would not, for perchance she get an electric shock.
36—Again were the gods propitious, so we arrived at the foot in safety, but my brakes smoked in their heat.
37—Which causeth the spark in the Jones to tingle in unbecoming fright.
38—And they searched the book of instructions for the remedy and find nothing, except in so far that it suggesteth in removing a tire, the wheel shall be first jacked.
39—Therefore he jacketh up the rear wheel and awaiteth developments, which develop not, for the wheel turneth stiffly at his turning.
40—So she suggesteth he cranketh the engine, which he doth.
41—And he followeth the modus operandi of instructions at her bidding.
42—But I move not, so they get out and she ordereth him to crawl under me in search of the trouble.
43—Yet he findeth none, except he seeth the jack under mine axle, and he saith:
44—"Truly am I fortunate in thee, my wife, for had we started we had lost one jack."
45—And he placeth the jack in the box whilst they discuss their perplexity.
46—Then she saith: "Try it again, for peradventure we omitted some important instruction."
47—So he starteth me again, and I move forward as directed.
48—In silence they sat some minutes, then she saith: "John Spark-Jones, I wonder what ailed the fool thing."
49—And he answered: "How in hell should I guess its eccentricities." Selah!

THE INDIGNANT FARMER.

"I'm just as mad as I can be!"
An angry farmer said;
"Those early strawberries of mine
Desire a folding bed!

"And my potatoes have declined
To ripen underground,
Unless, to keep dust from their eyes,
Smoked goggles I have found!

"The cabbage-heads, among them selves,
Indulge in secret chats;
But I have overheard them, and
They vow they'll have straw hats!

"Such foolishness I can not stand;
And now—just as I feared—
Each single stalk of wheat demands
A barber for its beard!

"The squashes, too, are getting proud;
It almost makes me smile;
They want the very finest neckwear,
Of the very latest style!

"But now the very limit's reached!
I learn, with stifled groan—
Each ear of corn insists upon
A private telephone!"
—Carolyn Wells, in "Harper's."

The Drovers Telegram publishes this bit of agricultural poetry:

The army worm is not afraid
And into danger scoots;
In battle line it is arrayed
Where vegetation shoots.

WHY ARE WE AFRAID?

Why are we afraid? What are we afraid of? We all have something we are afraid of. What it is depends on the individual. Some people are afraid of the dark; others are not. Women are afraid of mice; men are not. Some children are afraid of dogs; others are not. Some babies are afraid of strangers; others are not. Some people are afraid of burglars; others are not. Some are afraid to stay alone in a house. Since some people fear things that others do not, we may safely conclude that the cause of the fear is not in the thing, but in the person. If the fear arose out of the object then all people would be afraid of it.

What we are afraid of depends on us. We can make ourselves afraid of anything we want to, be it the fear of being poisoned or of being laughed at. And since we can make ourselves afraid of anything we can cure ourselves of any of our fears, our fear of the dark, our fear of staying alone or any of the others.

Our fears generally start from some past experience, to ourselves or to our friends. A friend may have been killed on a railroad train, and the knowledge of that accident may always make us uncomfortable when we travel. A relative may have been poisoned, and we can think about it until we are afraid of being poisoned. Alone, late at night we read of a murder in the paper, and instantly we begin to interpret every sound as the stealthy approach of an assassin. Stories of goblins told to children to keep them quiet may fill them with a dread of the dark that will persist after they have become men. And yet, if we stop to consider it, we will find most of our fears are groundless. We can cure ourselves of them by banishing all thoughts of them from our minds and thinking of something else.

The fact remains, we are afraid of what we allow ourselves to be afraid of.

BUBBLES

Bubbles big and bubbles bright,
Drifting in the pale sunlight.
Did you come from fairy lands,
Were you made by elfin hands?
Did they find you in the sky,
When some rainbow drifted by?
You were prisoners in this pipe
Till I blew with all my might;
At my magic out you came
Just as if I'd called your name:—
"Bubbles!"

It takes a wise woman to conceal her rage.

To prove to you that it costs less money, takes less time, makes better food, to cook in

"Wear-Ever"
ALUMINUM UTENSILS

We wish to send this one-quart stewpan for only ten 2-cent stamps.

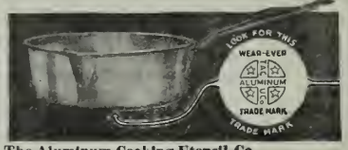
More than a quarter of a million women have tested "Wear-Ever" ware in this way. "Wear-Ever" utensils save fuel because they get hot quickly and stay hot longer than any other kitchen ware.

They save work because in them your food bakes without turning the pan, boils without stirring, roasts without basting.

Replace utensils that wear out with utensils that "Wear-Ever"

Send for booklet, "The 'Wear-Ever' Kitchen" (free) which tells you how to improve your cooking and cut down expense

WANTED: Men to demonstrate and sell "Wear-Ever" Specialties. Only those who can furnish security will be considered.



The Aluminum Cooking Utensil Co.
Dept. 63, New Kensington, Pa., or
Northern Aluminum Co., Ltd., Toronto, Ontario
Send prepaid 1-qt. "Wear-Ever" Stewpan. Enclosed is 20c. in stamps—money refunded if not satisfied.

Name.....
Address.....

A good oil stove cooks just as well as a wood or coal range—and does it quicker and cheaper. It saves your time and strength—for there's no wood, coal or ashes to lug. The

New Perfection OIL COOK STOVE

burns kerosene—the clean, cheap, easily-handled fuel. Its blue flame gives an intense heat and you can regulate it to any degree you want—just like a gas range. It doesn't smoke—nor taint the food. An ideal summer stove because it doesn't over-heat the kitchen. Many use it the year 'round. Dealers everywhere.

Standard Oil Company
(California)

Two Birds With One Stone

By Aldis Dunbar, in Mothers' Magazine

The other children had no difficulty in memorizing the multiplication table with matter-of-fact certainty. But when it came Lassie's turn to master those "firm foundations," on which must be built the after structure of "'rithmetic," she seemed to come to a sudden standstill before the seven table. "Six times" gave her but little trouble; yet neither school penalties nor the various inducements offered her at home proved forceful enough to carry her beyond that point.

"And I don't even dare to think about 'eight times,'" she declared, hopelessly.

"But, Lassie-love," I told her, "if you've learned up through the six table, by heart, you already know half of the sevens. Don't you see—'five times seven' is just 'seven times five,' turned around?"

"It isn't when I stand up in front of the class and try to say them," she said, with a little sob. "I get all—twisted. I wish there wasn't any 'rithmetic. I'd ever so much rather learn to do hemstitching and outline, and how to knit those lovely silk ties like big sister. It only takes two knitting needles. Mumsy, please show me how to knit on two knitting needles. I'm sure I can."

It was so. Lassie was a born needle woman and a little housewife of the dear, old-fashioned sort. Hemming crash towels—the "chore" over which I had toiled impatiently in childhood, even as she labored at the seven table—had no horrors for my deft little daughter.

"I think you could learn," I told her. "Knitting a plain strip on two needles—they call it garter stitch—would be easy, except for one thing."

Her dancing eyes questioned me eagerly.

"It must be done straight," I went on. "You can't put six stitches in one row, and eight in the next, and then seven in another, and have it look rght. It has to be done as evenly as—the seven table."

"But I could do that," she insisted. "I'd count every stitch."

"Very well, little daughter. We'll take the thick needles and heavy cotton and begin by casting on and knitting a little strip seven stitches wide. You must count the first six stitches on each row to yourself—and the last one aloud, to me. Like this: 'Seven, fourteen, twenty-one,' and so on, until your reach eighty-four. Then you must begin over again. When the knitting has taught you the seven table so that you know it perfectly, we'll widen it by one stitch, and learn the eights; then widen for the nines, tens and elevens. And on the day when you can go to Miss Ranney and recite without one mistake up to 'twelve times twelve,' we'll buy the knitting silk for a tie for you, and you shall do it all yourself—from casting on fifteen stitches to knotting in the fringe at the ends."

Even to Lassie's adroit fingers the management of the wooden needles was an awkward affair at first, but supper time found her chanting numbers steadily. By the end of the week she attacked "eleven times" with ardor—and in just six days from "the inspiration" the spool of deep cardinal silk was bought and carried home in triumph.

MR. FIVE HANDS.

Mr. Five Hands is a little ring-tailed monkey who lives at the Zoo, in London, where he is a great favorite with the children because he is so happy-hearted and merry. His cage is his playground, and there he entertains by the hour the crowds who gather to watch his antics and to laugh at his funny, quaint, old-mannish face and his jolly ways.

All Mr. Five Hands' family lived in the jungle. Indeed, he lived there himself till he was two years old, and played and chattered among the trees with the other monkeys, leaping from bough to bough, and mocking the tiger cat and the boa, which were unable to follow him.

There's little in the way of climbing that Mr. Five Hands can't do, though he isn't a very good walker. And it's that fifth hand of his that makes him such a wonderful climber. It helps him to keep his balance, and he can hang by it from a limb and swing back and forth with all the ease imaginable. Of course, you have guessed that his hand is nothing more nor less than Mr. Five Hands' long tail. It winds about a bough like a supple finger, and is so muscular that it bears his weight with ease.

Mr. Five Hands loves to be petted and cuddles up in the arms of his keeper like a child. He has a plaintive little way of chattering, but when he takes a notion to shriek, it's time to put your fingers in your ears! He is very quick to learn, and his keeper has taught him a number of tricks and trained him to have nice monkey manners—all but table manners. Mr. Five Hands' way of dining is something to view with pain and sorrow. He is nothing short of a glutton, and wastes three times as much as he eats. He is very fond of boiled rice and milk, and bread and milk, potatoes, apples and carrots.

Mr. Five Hands is clean and well coated, and has, apparently, a great aversion to untidiness in others, for when he is not playing, his favorite diversion is picking specks of sawdust and dirt from the coat of his cage-mate.

It is too bad that Mr. Five Hands will not always be as amiable and happy as he is now. Sad to tell, he will be very cross and disagreeable in his old age. Perhaps it will just mean that he is homesick for the jungle. But it's difficult, now, to imagine him anyway but care-free and happy

TRAINING ANOTHER'S CHILD.

They all sat 'round in friendly chat
Discussing mostly this and that,
And a hat.

Until a neighbor's wayward lad
Was seen to act in ways quite bad;
Oh, 'twas sad!

One thought she knew what must be done
With every child beneath the sun—
She had none.

And ere her yarn had been quite spun
Another's theories were begun—
She had one.

The third was not so sure she knew,
But thus and so she thought she'd do—
She had two.

The next one added, "Let me see,
These things work out so differently."
She had three.

The fifth drew on her wisdom store
And said, "I'd have to think it o'er."
She had four.

And then one sighed, "I don't contrive
Fixed rules for boys, they're too alive."
She had five.

"I know it leaves one in a fix,
This straightening of crooked sticks."
She had six.

And one declared, "There's no rule given,
But do your best and trust to heav'n!"
She had sev'n.

—Selected.

Do You Want a Set of Dishes FREE

Even if you are supplied now—you should have need of a new set soon. So write us about this offer of a

36-Piece Dinner Set Without Cost

This set has a gold decoration, and was selected from hundreds submitted. It is acknowledged by all who have seen it as the best ever put on the market.

This Offer Is Made to Women Readers of Orchard & Farm

Write for full particulars how to get the Set of Dishes Free.

ORCHARD & FARM

Hearst Building San Francisco

The Household Exchange

The request for suggestions on canning or the preparation of fruit in the kitchen have brought out for our Household Exchange this month some pointers that will be extremely good for housewives during the remainder of the season and for coming years. To the authors of the first two of these suggestions we sent a spring balance, and for the next three a food chopper. For the others we gave either a skirt gauge or a needle case, the latter holding a large assortment of needles of various sizes and pins of several kinds. For the September suggestions similar awards will be given, possibly something else being substituted for the needle cases and skirt gauges.

We believe that ways of selecting and preparing meat provide a neglected but important topic for suggestions, and this will be our topic for September. Many housewives may not know well what cuts are best, considering quality and price, or of two pieces of meat which shows indications of being the better.

How to know this will be more than worth while; also any good suggestions regarding the preparation of meat for the table, or of dishes into whose composition meat largely enters.

When sending in these suggestions the following rules must be observed:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only, and sign name and address after each suggestion.

Not more than two suggestions a month may be sent by one person, and only one award will be given to one individual in a single month. Do not send a letter with your suggestion. The suggestion itself is enough.

Address all your suggestions to Household Editor, "Orchard and Farm," Hearst building, San Francisco, Cal.

We wish to particularly emphasize the importance of keeping the suggestions within the limit named for length.

The suggestions for this month follow:

Cool Drinks in Hot Weather.

Grape Lemonade—Take one pint of grape juice, juice of two lemons, one small cup of sugar, one quart of water. Keep on ice until served.

Raspberry Shrub—Take juice of one quart of red raspberries, two lemons, one quart of water and sugar to taste.

Egg Lemonade—Extract the juice of half as many oranges as lemons, add sugar to taste. Allow one egg, thoroughly beaten with egg beater, to every three glasses. Add cracked ice and water, mixing thoroughly before serving.—MRS. J. L. BEVERS, Oleta, Cal.

Making Grape Juice.

After washing the grapes, I mash them in a large granite pan, with a wooden potato masher. I place a colander over a granite kettle and drain the juice into it. This juice I strain again through a muslin bag, and then put it on the stove to heat, just getting it hot enough to keep, but I do not allow it to boil. After skimming it, I pour it into heated bottles through a cloth funnel. Then I press the wet corks in firmly, tie on, and dip in melted paraffine. Made this way, the juice retains the natural flavor of the grape, and makes fine sherbet. The pulp that is left I put in a kettle, cover with water, boil a few minutes, strain and bottle, and use for mincemeat, etc.—ELLEN A. CORMACK, Paso Robles, Cal.

Left Over Fruit Juices.

Often in canning fruits which require a syrup made for them, such as cherries, plums, pears, prunes, quinces, etc., there is syrup left over. I have seen ladies who consider themselves very economical throw this away. There are many uses to which it can be put. Put it in the fruit jars and seal it up just like the canned fruit, and it will be ready when needed. When making mincemeat for the winter any number of different kinds of juices may be added, and it will impart a delicious flavor and also save a considerable amount of sugar. The juices are also good to serve with puddings and salads. The cherry or strawberry juice is especially nice added to lemonade in summer, and, giving it a pink color, delights the children. MRS. L. C. LEE, Aurora, Oregon.

When Canning Fruit.

In order to retain the flavor and prevent molding, I find this an excellent method: Have your tinner make a tank, two feet long, one foot wide and one foot high. This holds eighteen Mason quart jars. A frame made of laths prevents the jars from touching the bottom of the tank. Put the uncooked fruit in jars and press solid, then add two tablespoonfuls of water to each jar and as much sugar as desired. Place jars in tank and fill it half full of cold water. Place lids loosely on jars and bring water to the boiling point, continuing to boil until the fruit is clear and well cooked. When the fruit is done, lift the jars from the tank, wipe dry, then put on the rubbers and seal.—MRS. ALFRED L. BATY, Cedarville, Cal.

Quince and Apple Preserves.

Wipe the quinces clean, pare, core and cut in quarters or finer; boil the skins and cores in considerable water till soft, strain off the water, put in the quinces, boil till tender, skim out and put a third or more apples that have been pared and cored in the juice till they are tender, but not mushy. Add quince and sugar to taste. Let simmer altogether till pink, then can.—MRS. FRANK MORIN, Healdsburg.

Rubber Preservative.

After using old jar rubbers, put them in hot water, then dry them well and have ready the white of an egg in a saucer. Dip the rubber in the egg and put it on the jar. Rubbers treated in this way are as safe as new ones and less expensive.—MRS. A. SCHUENEMANN, Peanut, California.

TO Renew Jar Rubbers.

If fruit jar rubbers are treated by the following method they are as good or better than new ones, and can be used many times: Wash thoroughly when removed from the jars and hang in a dry place. When a quantity have accumulated, dip each in melted paraffine, dry over night, and pack in a box until needed; use two on each jar of fruit, and you will not lose a jar.—MRS. STELLA HAGGARD, Ocidental, Cal.

Orange Marmalade.

Peel nice, large oranges and cut the peel into shreds, pour on cold water and simmer until soft, changing the water every few minutes. This removes the bitter taste. Then shred the pulp and add with the juice to rind. Put equal parts granulated sugar, and simmer till clear. This is like the best imported marmalade.—MRS. F. SWANSON, Fallon, Cal.

Raspberry Canning.

When canning raspberries on the farm, try picking them in the jars, jarring down slightly, then fill jars with a syrup made from one cup of sugar to one and one-half cups of water and cook a half hour in steam cooker. Next winter these will taste as though just picked from the bushes. When making apricot marmalade, add one pint of grated pineapple to one-half gallon of apricot pulp and note the improvement in flavor. Be sure to bottle juice of Logan and raspberries this summer for use in fruit blanc mange, sherbets, fruit punch, etc., next winter.—MRS. F. E. SCHROEDER, Alton, California.

Several Canning Hints.

One likes to have a variety of fruit, so if you have only a few kinds, put it up in a variety of ways and put up a few jars each day in fruit season. Put rubber on jar before jar is filled and never wipe juice off rubber, screw down lid and turn jar upside down until cool, and if there is a leak, it will soon be detected; and never try to tighten lid after fruit cools, as it breaks the seal. When preserving cherries and you have no regular seeder, an ordinary hairpin makes a good one. Insert closed end of hairpin at stem end of cherry and draw out pit. For hulling strawberries, use the little tongs that come in candy boxes. Fill your jars full of grapes and pour over them a boiling syrup. They will remain firm.—MRS. EMMA SMITH, Millville, Cal.

Brandied Peaches Without Brandy.

Take thoroughly ripe cling peaches, peel, fill half gallon fruit jars to about an inch from the top, pack to the top with white sugar, shake well so that the sugar will fill all space in the jar, screw the tops on tight, then put the jars about two feet deep in the ground, packing the dirt well over them. Let them stay there six months and when taken up you will have the same delicious brandy peaches without having put a drop of brandy in them. I have tried this and know it will be a success if directions are followed. The peaches are good and the brandy clear.—MRS. THOMAS LEWIS, Bozeman, Mont.

Write for Free Catalog

Send Only **75c** And We Ship You This Superb ROCKER

Only 75c down and then 50c per month and we ship you this magnificent rocker—$4.95 in all for this handsome piece of furniture. Write for free catalog to-day. You can see for yourself what an elegant rocker this is. It is made of high-grade solid oak, profusely carved. A large, roomy, comfortable, well made Rocker, with high, wide back, fully tufted and buttoned. Upholstered with high-grade black Boston leather. Seat is made over full steel springs, has beautiful ruffled edge. Order No. 0F3501. This Rocker is only one of our special bargains.

MONTHLY PAYMENTS

The great house of M. Friedman & Co. with a proud quarter-century record, indorsed by the greatest bank, will trust you and allow you to buy any article on easiest montbly payments. If you want anything in rockers, chairs, bedsteads, carpets, rugs, curtains, refrigerators, crockery, silverware, baby carriages, go-carts, stoves, ranges, or any other article of house-furnishing, don't fail to get our sensational easy terms.

FREE New Big Money-Saving Catalog

Don't wait a minute before sending for our great bargain catalog. Bargains which are positively astounding.

Write To-Day---Don't Wait

Send a postal or letter—but send right now. Just your name and address on a postal or letter and we will mail free and postpaid our catalog.

M. FRIEDMAN & CO.,
261 Post St. San Francisco, Cal.

HEALD'S

Schools Located in
San Francisco, Oakland, Fresno, San Jose, Sacramento, Stockton, Chico, Reno, Nev.; Santa Cruz, Los Angeles, Riverside, Long Beach.

Write for Prospectus to the school you wish to attend.

Main Office, Post st. and Van Ness ave., San Francisco.

The Way to Keep Milk and Butter Fresh--Pure--Sweet Without Ice

The "Desert" Milk and Butter Cooler

An economical, sanitary and handy method of keeping Milk and Butter at a cool temperature without a refrigerator. Made of heavy Flax Fabric (special weave), acting as a water jacket, the outside surface is kept moist from the water within, and the action of the atmosphere causes sufficient evaporation to keep the water COLD. The same principle makes the water cold in the water bag.

Will accommodate either a quart or a pint (standard milk bottle) or one 2-lb. square of Butter (with extra part).

By Parcel Post—postage paid, Milk Cooler, $1.00; With extra part for Butter, $1.25.

W. A. PLUMMER MFG. CO.,
Agents Wanted. 37 Front St., San Francisco.

A COOL DRINK ON A HOT DAY

1 gal.--- 85 2½ gal.--$1.25
3½ gal.--$1.60 5 gal.---$2.00

WITH FAUCET

3½ gal.--$2.00 5 gal.---$2.50

Sold by leading dealers.

THERE ARE BARGAINS WORTH WHILE CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD READ THEM FOR PROFIT.

Useful and Up-to-Date Patterns

No. 4934—Infants' Bib and Handkerchief. One size. Any one bib requires ⅜ yard 27-inch material. Handkerchief requires ¼ yard 27-inch material. Price, 10 cents.

Embroidery design No. 11735. Transfer pattern, 10 cents.

No. 5793—Ladies' and Misses' Vests, Belt and Girdle. Vest A having two styles of collars and may be made with or without pocket laps. Girdle may be made with attached side-plaited section or with vest tabs. Sizes small, medium and large. Medium size requires for vest A, ⅞ yard material; vest B, ¾ yard; girdle C, ⅞ yard, and belt D, ⅜ yard; all 36 inches wide. Vest A requires ⅝ yard 27-inch lining. If made without side-plaited section girde C requires ½ yard 36-inch material, and if made with tabs, ⅝ yard 36-inch material. Price, 10 cents.

No. 5325—Ladies' Four-Piece Skirt. High waistline. Closing to left of center-front under plait. Lower front part of skirt may be made straight or rounded. Width around lower edge about 1⅝ yards. Sizes 21, 22, 24, 26, 28, 30, 32 and 34 waist. Entire costume in medium size requires 4⅜ yards 44-inch material, with 1 yard 27-inch material for girdle, ⅝ yard 27-inch contrasting material for collar and ½ yard 18-inch tucking for shield. Price, 15 cents.

No. 5536—Two-Piece Maternity Skirt. With slightly raised waistline. Width around lower edge about 1½ yards. Sizes 21, 22, 24, 26, 28, 30, 32 and 34 waist. Size 26 requires 2⅝ yards 54-inch material if back gore be cut on a fold, or 2⅝ yards 44-inch if made with seam at center-back. Price, 15 cents.

No. 5211—Boy's Suit. Blouse slipped on over head, having adjustable shield; also knickerbocker or knee trousers with front or side closing. Sizes 3, 4, 6, 8, 10 and 12 years. Size 8 requires 2⅜ yards 54-inch material. Price, 15 cents.

No. 4644—Boys' Knickerbocker Trousers. Gathered into a band at lower edge and having a fly closing. Sizes 4, 6, 8, 10, 12 and 14 years. Size 8 requires ¾ yard 54-inch material. Price, 10 cents.

No. 4497—Men's Negligee Shirt. With coat closing or to be slipped on over the head. May be made with plain or turn-back cuffs or wristbands. Sizes 36, 38, 40, 42, 44, 46, 48 and 50 chest, corresponding with 14½, 15, 15½, 16, 16½, 17, 17½ and 18 neck. Size 40 requires 3½ yards 36-inch material. Price, 15 cents.

No. 5743—Ladies' Lounging Robe. Body and sleeves in one, adjustable shield, high waistline and attached two-piece skirt. Width around lower edge about 2 yards. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 5⅛ yards 36-inch material. Price, 15 cents.

Embroidery design No. 11398, scallop No. 11854; transfer patterns, 10 cents each.

No. 5837—Ladies' Shirt Waist. Without lining. Having long or short one-piece sleeves and adjustable shield, with high or round neck. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 2¾ yards 36-inch material, 2⅜ yards 44-inch material, or 3⅝ yards 27-inch material. Price, 15 cents.

No. 5757—Girls' Long-Waisted Dress. Without lining. Having long bishop sleeves perforated for short sleeves, or having short puff sleeves. Adjustable shield and attached four-piece skirt with inverted plait at center-back and a three-piece tunic. Sizes 6, 8, 10, 12 and 14 years. Size 8 requires 2¾ yards 44-inch material. Price, 15 cents.

Address all pattern orders to Household Department, "Orchard and Farm," Hearst Bldg., San Francisco, Cal.

DILL PICKLE RECIPE.

Will you please give me recipe for making dill pickles from green cucumbers, also tell what temperature to store in after putting in kegs—M. L., Yerington, Nev.

The following instructions regarding the making of dill pickles have been given us by a lady who is an authority on the subject:

Make a boiling hot brine strong enough to float a potato. Pour on cucumbers while hot, weigh down and let stand for 24 hours. Then drain off brine, pour boiling fresh water on cucumbers and let stand another 24 hours. Then put in the following seasoning to suit taste: Sliced onions, dill, mustard seed and a little vinegar. Pack tightly in jars. Keep in a cool place.

After using moth balls, turpentine, etc., which give such an unpleasant odor, I was persuaded to use whole cloves and for the past two years I have found that moths will not stay where there are cloves. I put them in the bottom of trunks, chests, etc., in the folds of blankets, pockets of coats, in fact all through different garments. The cloves can be easily shaken out when the garments are needed and the odor is quite agreeable.—MRS. STELLA HAGGARD, Occidental, Cal.

California

AND PACIFIC COAST

Nature's Exposition

AND ALL-THE-YEAR VACATION GROUND

Yosemite National Park
Mariposa Big Tree Grove
Shasta Resorts
Del Monte and Monterey Bay Points
Paso Robles, Santa Barbara and Coast Country
Los Angeles and its Beaches
Pasadena, Riverside and Redlands
Byron, Paraiso and Gilroy Hot Springs
San Joaquin and Santa Clara Valleys
Lake County Resorts and Springs
Lake Tahoe Region
Klamath and Crater Lakes
Kings and Kern River Canyons
Santa Cruz, Mountains and Big Trees
Sacramento Valley
San Francisco, Oakland and Bay Region
Portland, Tacoma and Seattle

For Fares, Train Service and Descriptive Booklets Ask Agents

Southern Pacific

THE EXPOSITION LINE—1915—FIRST IN SAFETY

Some Simple Home Remedies

Contributed by Our Readers

The July issue of "Orchard and Farm" contained a number of simple home remedies contributed by our readers for the Household Exchange. So many came in that it was out of the question to utilize all in one issue, so we give below a number of the suggestions along this line that were left over. To the contributors of these we are mailing some small article which we feel will be useful around the home.

Incidentally we might state that people evidently are more interested in their ailments than any dozen other subjects that might be named. We have dozens of suggestions on hand yet and the task to sort them is too great; we can only pick out a bunch of them to use now and expect to use others later on.

To Keep Lemons

In warm weather lemons get very hard and dry or spoil. This can be prevented by placing them in a fruit jar or earthen crock and filling with water. Change the water according to the weather; if the days are cool every two days will do. I have used this method for more than two years and have never had any lemons spoil. In fact, they are as fresh three or four weeks old as the day they were bought.—MRS. G. A. ENOS, San Luis Obispo, Cal.

Potatoes for Burns

I was badly burned and while my daughter was going to the drug store a neighbor put raw mashed potatoes all over my face and hands. It took out all the fire and the pain soon ceased. The potatoes turned black and a fresh supply was ready and put on. I did not use the medicine from the drug store and my face and hands never blistered, but kept red a day or two and then became natural.—MRS. EDITH HAYNER, Portland, Ore.

Cure for Poison Oak

Mix one tablesponful of liquid ammonia and one tablespoonful of salt in one quart of warm water and bathe thoroughly all parts that have been in contact with the poison.

The above formula will also cure old sores and cause them to heal, even when proud flesh appears. Have water as hot as can be borne and hold sore in it for at least ten minutes, then dress with any good salve. —MRS. C. M. HOWARD, Otay, Cal.

Appendicitis Cure.

For appendicitis take pure olive oil in wine glass doses three or four times a day, with hot applications over the pain. I knew this alone to cure a very severe case, and it will cure any ordinary light case. It is also splendid for gall stones.—MRS. F. SWANSON, Fallon, Cal.

Ginger for Tired Nerves

The best thing I have ever tried for unstrung nerves and sleeplessness is a drink of hot ginger tea just before retiring. This draws the surplus blood from the brain and quiets the nerves. Take about one-fourth teaspoon of ginger in a cup and pour on hot water. Put in enough sugar to make it palatable, and drink it hot.—MRS. F. SWANSON, Fallon, Cal

Corns and Callouses

Almost instant relief for tired feet or for corns or callouses is obtained by rubbing them freely with a cake of moistened soap. An application before beginning a long walk or a day's work will wonderfully lessen fatigue.—MRS. T. J. SMITH, Escondido, Cal.

Cough Cure

Take two or three large white turnips, wash clean, do not peel, cut in slices about one-half inch thick, put in a dish and pour over them two teacups of brown sugar. Let stand till it forms a syrup and give it real often until cough stops. This is excellent for children to take. Onions prepared as above are good also.—MRS. L. W. OCKEN, Ceres, Cal.

To Remove a Splinter

Heat the point of a needle red hot; when cold pick out the splinter with it. Wash the wound thoroughly with warm water and drop a little peroxide of hydrogen on the place. There will be no danger of blood poisoning.—MRS. C. R. FIELD, San Jose, Cal.

Coughs and Colds

Mix one tablespoonful of lard, one tablespoonful of black pepper and enough turpentine to make moist. Rub on chest and throat when retiring. This keeps one from coughing and drives out the soreness of the lungs.—MRS. IDA COUNTS, Goldson, Ore.

Cough Remedy

The best cough remedy I have ever used is made by using one handful of mullin leaves, the same of hoarhound and about a quart of water. Let this boil well, strain, add a cup of sugar or molasses. Take two or three tablespoonfuls a day. This will stop the worst cough or cold.—S. GAUSTAD, Cedarville, Cal.

Inflammation of Bowels.

Take the yolks of eight eggs and put in a granite pie plate, place on stove where it is just warm, pour in enough camphor to make a paste, similar to any poultice (but do not boil, just warm). Place between two thicknesses of old cloth and apply next to the skin. I and a number of my friends have tried this, especially on children, and it never fails.—MRS. J. M. SHIPLEY, Sheridan, Ore.

Old Remedy for Biliousness

When the mouth tastes bad, the tongue is coated and the appetite flags, it is the best possible evidence that too much food has been taken, and if one would avoid biliousness, let him fast for one or two meals, thus allowing nature to rally and the accumulated food to pass off and relieve the system. In nine cases out of ten this is all that will have to be done to save a spell of sickness and cheat the doctor.—MRS. STELLA HAGGARD, Occidental, Cal.

Carrot Salve for Burns

Take leaf lard and try out. Grate red carrots, skin and all. Squeeze cracklings out of lard, add the carrots and fry to a good brown. Strain through cheesecloth, to remove carrots, then add two tablespoonfuls of light brown sugar and heat till sugar is dissolved. Put in vaseline bottle or any covered receptacle.—MRS. C. M. BONES, Sebastopol, Cal.

Cure for Burns

Wrap the burn instantly in coal oil and keep it in the coal oil till it quits smarting and commences to smart again. Then wrap it in oil from one to twelve hours, according to the burn. I know this is good, as I had hot lard spilt over my hand and it made me so sick I could not help care for the burn and they took my hand, fixed it as described and it did not even blister, though it was tender for two days.—MRS. THOMAS J. REUCK, Tulare, Cal.

Aid for Sprains.

First bathe the affected joint in hot water, adding more as the water cools. Use the hot bath at least 20 minutes and then plunge into a cold bath for five minutes. Use the following liniment freely: One cup strong vinegar, one-half cup turpentine, one egg beaten to a froth, two tablespoons salt; put all in a bottle and shake well and use. Then bandage with two-inch bandage torn from old white muslin. Repeat bath and liniment as it becomes painful. I have used this in severe cases when far from a doctor.—MRS. EUGENIE LINSVILLE, Butte City, Cal.

Well Kept Hands

Two bottles should be kept in a handy place in the kitchen, one containing five parts of lemon juice to one of alcohol, the other containing one-fourth ounce of tragacanth added to a pint of rain water and left standing three days; then add one ounce each of alcohol, glycerine and witch hazel, also a little good perfume.

After washing dishes, preparing vegetables, or doing any of the rough kitchen work, apply a little of the lemon juice, then the other lotion, and in a moment the hands are dry, soft and smooth. All stains disappear quickly and the nails are cleaned easily. This process repeated a few times a day will repay any housekeeper for the slight trouble. The expense of this preparation is comparatively nothing. — NO NAME GIVEN.

Vermin Preventive

There are not many people who know that if oil of cedar is dropped in dark closets and boxes where blankets and the family clothes are kept, and on the edges of mattresses, neither fleas, moths nor bedburg will be found there. The cost is ten cents an ounce, and the smell is pleasant.—MRS. H. C. WOOD, Hayward, Cal.

Preventive for Croup

Four children, with an inherited strong tendency to croup, were raised in a cold, wet climate without a single case of the real disease, by the use of this preventive:

Whenever a child showed hoarseness and a croupy tendency, the feet were soaked in water as warm as could be endured. Then a cloth wet in cold water was wrapped about the neck and a dry flannel placed over it. In a very few moments the inner cloth would be hot and almost dry. It was then removed, wet again, and replaced. In a very short time the little sufferer would be relieved, and would be slumbering peacefully. Hot water packs may be used if one fears the cold, and some say they are quite as effective, but I never tried them.—MRS. MARY M'CRAE CULTER, El Modena, Cal.

Cracked Skin Between Toes

For the painful tear of the skin between the toes, which is often found at night in warm weather, take a bit of white wool yarn or the nap from the blanket and press on the sore place and it will be cured by morning.—MRS. M. E. M'DANIEL, Templeton, Cal.

Watch for the Sign

RED CROWN

the Gasoline of Quality

Wherever you see the Red Crown sign you can buy an honest, reliable gasoline—the uniform—quick acting—clean burning kind that gives you full power—that costs you least *per mile.* Red Crown is not a "mixture," but a straight distilled, refinery gasoline—the best the Standard Oil Company can make. In gasoline, it is economy to buy the best.

Red Crown signs are furnished to all dealers handling Red Crown Gasoline. Watch for the Sign or ask our nearest agency about delivery in bulk.

Standard Oil Company
(CALIFORNIA)

The Gas Engine for Housework

By C. H. Seaver, Wyoming Agricultural College

"John," said a tired Kansas woman at the end of an unusually hard day, "why can't I have an engine to help in my work around the house?. You seem to have cornered all the labor-saving machinery."

John pushed his chair from the supper table. "Fine time you'd have with an engine," he remarked. "I'd have to start it, and like as not you'd be calling the boys in from the field to stop it for you after it got to going."

"Not at all," retorted the nettled wife, "and an engine of the right size to run my washing machine, churn, and pump water for me, would take about nine-tenths of the backache out of my housework."

This up-to-date woman was right, and the fact that her many hard working sisters have not yet reached her point of view accounts for the few women who know engines—even small ones. Yet these engines deserve as much consideration from the woman on the farm as from her husband. It is as important to save money and labor in the house as outside of it.

At the commonest of every day tasks a powerful little engine soon makes itself a necessity. Imagine a wash-day which consisted of nothing more than putting clothes, soap and hot water in a washer, giving a few quick turns to the wheel of a little engine, and leaving it alone to do its work. An hour or so later the clothes are thoroughly washed, ready to be put through a wringer turned by the same engine. Churning is reduced to the same simplicity, and the hard work of pumping water for the house becomes a thing of the past.

While the little attention needed can be easily given the engine by any housewife, there is another solution that gives her the use of the engine, and at the same time makes another problem easier. The solution is the growing boy, and it is the problem of keeping him on the farm that it, at least partially, solved. His liking for machinery finds an outlet in caring for a real engine, and it is stimulated by the fact that the engine does useful work. The woman whose son is her "engineer" need have no fear that her power plant will go back on her when she needs it most. Starting and caring for a gas engine is not a hard task for a small boy. As an educator the engine has, for the growing boy, an inestimable value. From it he learns the care of machinery, the principle of the internal-combustion engine, and the economy of labor-saving machinery for tiresome chores. It prepares him for the operation and care of larger engines.

Overtopping all other advantages of the small gasoline engine is the all important one of economy. Conservative estimates on a gas engine of well known make show that by its use upward of $50.00 can be saved in a year; taking into account only chores and work done by the men. This amount would be considerably increased if woman's work was also made a part of its duties. A few cents' worth of gasoline would suffice to do the hardest day's washing, and experience shows that in the work of pumping, two pints of gasoline will supply power to raise 2,000 gallons of water against an 80-foot head.

Thus, for the woman as well as her husband, gasoline and the internal-combustion engine have opened up the way not only to the enjoyment of more leisure time, but to a more economical accomplishment of her work. It is not an expense, but an investment, as truly as are the machines that manufacturers have put at the disposal of her husband. Seen in this light, the returns not only in money, but in comfort, satisfaction and educational value, are great, compared with the moderate purchase price and small operating expense. The husband who realizes that his wife's work as well as his own can be put on a more profitable basis, by the use of gasoline engines, has taken an important step forward.

SHARPENING LAWN MOWERS.

It is quite a general practice when a lawn mower becomes dull to take it to a shop to have it sharpened: At the shop there are two methods employed in sharpening the mower. One method is to use a file on the reel and blade. This is a very poor way, as only experts with the file can produce a good job. More often the blades are uneven, being too high in places and too low in others. The result is the blades on the reel do not touch the lower plate or blade the same throughout their length, causing the mower to run hard and cutting the lawn unevenly.

The second method is to grind the blades of the reel in a special machine designed for that purpose. This is a much better way than the first method, as it leaves the blades quite true. But this method does not give the result required, as the lower plate or blade is not touched in the process of grinding. To put the mower in the best condition both the blades of the reel and the lower or fixed blade require sharpening.

A lawn mower may be sharpened at home, at a very small expense, and in such a manner that the objections alluded to above are entirely eliminated. Reverse the driving wheels on the mower, thereby driving the reel backward. Set up the lower blade until the reel touches it. Feed in between the reel blades and the lower, fixed blade emery or carborundum mixed with oil to the consistency of thick paste. Run the mower over the lawn. This will grind the reel blades and the fixed blades at the same time. Both blades are made true with each other, and the mower will run as nicely and do as good work as when new. There is no danger of spoiling the machine by sharpening it in this manner.

Tubes of paste consisting of carborundum and grease are on the market for this purpose. A 25-cent tube of this paste will sharpen a lawn mower for a whole summer, and only a few minutes every two or three weeks will service to keep the machine in first-class condition.—Colorado Agricultural College.

SCISSORS IN THE KITCHEN.

The value of scissors in the kitchen cannot be overestimated. Too many kitchens are without them, knives which are less effective and convenient being used as substitutes.

The large scissors are invaluable for cutting poultry wings, meat for soups and stews, fins from fish and for cutting doughs into noodles or dumplings.

The smaller scissors are excellent for fixing fruit, shredding lettuce, cutting orange into strips for marmalade, or candied peel. They are also good for removing the core from orange or grape-fruit, scalloping the edges of fruit for cups and for cutting nut meats or marshmallows for salad.

The scissors must be kept perfectly clean, being washed in boiling water and dried with a soft cloth immediately after using.

Purchase scissors for the kitchen and do not bring down some old worn-out ones from the sewing-room. —Colorado Agricultural College.

Minutes of the Sewing Circle:
Tat—
Chat—
Spat—
Scat!

PROGRESS IN THE KITCHEN.

The fact that a thing has always been done in a certain way—the mere precedent—limits originality and halts progress. For example: In a recent issue of "The Survey" the question why kitchen sinks have been made so low was discussed. No one seemed able to explain. Finally a certain maker discovered that the original sinks were made when the washing of dishes and other sink work was done in wooden tubs with high sides. Such a tub, when used in a nigh sink, came up too far, so the sink was made low. Furthermore, as running water and fixed faucets had not long been made, the tub had to be lifted out of the sink, and the lower sink the lighter the lift. Though improvements in faucets, dishpans and other accessories of kitchen sinks have been made, no one has seemed to realize that the sink could be improved by raising. So women were—and are—compelled to endure discomfort when doing their ordinary household work.

Lemons placed in the oven and thoroughly heated, then rolled with the hand, will have a delicious flavor which never is found when the lemons are used cold. They will also be more juicy.—MRS. G. A. STEWART, Blue Lake.

MANY "DEADLY" MICROBES.

The following, clipped from an exchange, will be of interest to persons who make their lives miserable by worrying over sanitation, possible disease and such matters:

A noted bacteriologist of Lyon, France, recently astonished his little son whom he found making mud pies in the playground park. Curiosity led the father to take one of the pies home for examination. He found 10,215,000 dangerous microbes in the few cubic inches of earth, classified as follows: 1,800,000 diphtheria, 2,450,000 measles, 300,000 smallpox, 3,000,000 tetanus, 900,000 dysentery, 575,000 pneumonia, 620,000 tuberculosis.

Microbes are getting in person's brains so much these days that it is really dangerous for people to live in the same community with them. It is a safe bet that the boy allowed to play with these mud pies enjoyed the best of health. The boy kept so he is practically excluded from contact with microbes of any kind is the one in danger. His system is not inured to them and in condition to counteract their effect.

"George Washington sure was handicapped," says the Atchison Globe, "because he couldn't tell a lie."

How the Bell System Spends its Money

Every subscriber's telephone represents an actual investment averaging $153, and the gross average revenue is $41.75. The total revenue is distributed as follows:

Employes—$100,000,000

Nearly half the total—$100,000,000—paid in wages to more than one hundred thousand employes engaged in giving to the public the best and the cheapest telephone service in the world.

For Supplies—$45,000,000

Paid to merchants, supply dealers and others for materials and apparatus, and for rent, light, heat traveling, etc.

Tax Collector—$11,000,000

Taxes of more than $11,000,000 are paid to the Federal, state and local authorities. The people derive the benefit in better highways, schools and the like.

Bondholders—$17,000,000

Paid in interest to thousands of men and women, savings banks, insurance companies and other institutions owning bonds and notes.

Stockholders—$30,000,000

70,000 stockholders, about half of whom are women, receive $30,000,000.

(These payments to stockholders and bondholders who have put their savings into the telephone business represent 6.05% on the investment.

Surplus—$12,000,000

This is invested in telephone plant and equipment, to furnish and keep telephone service always up to the Bell standard.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

Great Sale of Summer Goods for Out-of-Town Patrons of D. Samuels

The period of Clearance Reductions and Extraordinary Special Purchase Sales has commenced at D. Samuels. Throughout the departments we are reserving for a period of ten days after the publication of this journal, fair quantities of the very best styles and values, that are not given to our city customers, but are reserved in the Mail Order Section for country customers.

Owing to the scarcity of time and the variety of designs and styles, it has not been deemed feasible to use illustrations. Every comparative value is EXACTLY as advertised. Any item not thoroughly satisfactory can be returned at our expense and the purchase price will be immediately refunded.

Wash Goods

32-inch figured, striped and flowered organdies, lawns and dimities; 15c values. At **10¢** yd.

27-inch fine silk-finished crepes in white ground with colored stripes and figures; 35c values. At **19¢** yard.

32-inch Scotch Wool Shirting and Waisting Flannels in stripes and checks, dark and light grounds; 50c values at **35¢** yd.

Neckwear at 10c

Accumulated, handled and windowed displayed neckwear that has sold from 25c as high as 75c, comprising jabots, embroidered and lace trimmed stock collars, hand-embroidered stiff Dutch and sailor collars, mufflers in red, white, black and grey.

All to be closed out in the Mail Order Department at **10¢** each.

Beaded Bags At $2.50

100 beaded bags sent to the Mail Order Department that have sold at $4.00, $4.50 and $5.00, to be closed out at **$2.50.**

Children's Leather

hand purses in red and green, either chain or leather handles. Regularly 50c, to be closed out at **25¢.**

Hand Bags $1.15

The season's accumulation of hand bags, consisting of tapestry, suede, morocco, seal and silk in different colors and shapes, that have sold as high as $5.00 and $6.00, to be closed out at **$1.15.**

Ribbons at 29c

Special Dresden and brocaded ribbons in medium and light colorings, 5 and 6 inches in width. Values to 50c yd., at **29¢** yd.

Veilings at 15c

Special lot of veilings in different shadow designs and chenielle effects in black, white and colorings. Values to 65c yard—to be closed out at **15¢** yard.

Jewelry at 65c

A great variety of jewelry, comprising beads of all kinds and colors in opera length, bar pins, earrings, buckles, coin holders, perfume holders, flower pins, bracelets, shoe buckles, silver neck chains, cuff links and small German silver purses. $1.00 to $2.50 values, at **65¢** each.

---

35 dz. lace and embroidery trimmed sheer Nainsook Corset Covers; worth to 65c—at **45¢** each. Sizes 36 to 44.

Hosiery at 19c pr.

15 dz. fancy Hose of varied description, that have sold at 50c per pair, to be closed out at **19¢** pair.

House Dresses $1.25

300 English Percale House Dresses, warranted perfect fitting and fast colorings—light and medium shades; worth $1.75, $2.00 and $2.25. At **$1.25** each.

25 dz. Madras, Gingham and Seersucker Wash Petticoats, mostly striped. $1.00 to $1.25 values. At **75¢** each.

Silk Department

Genuine Oriental Shantung Pongee, 34 inches wide; splendid quality. Our regular $1.00 leader. At **79¢** yard.

Our best $1.00 Satin Striped Wash Silks, white and cream grounds with dainty satin stripes. Special, **88¢** yard.

Black Taffeta Silk and black Satin Duchesse, two extraordinary values, 36 inches wide. Regular $1.50 quality. At **$1.19** yard.

95c Waists

Several hundred Voile and Lingerie Waists, some high neck, others low—blouse effect, long and three-quarter sleeves. Broken sizes that have sold from $1.75 to $2.50. At **95¢** each.

Val Lace 25c per piece

Hundreds of pieces of Valencienne Edgings and Insertions—the result of broken sets, in widths from three-eighths to one inch wide—that have sold from 75c to $1.25 per dozen yards—at **25¢** per piece of 6 yards, or **50¢** per piece of 12 yards.

$2.95 Waists

Three Sections of Street and Evening Waists of shadow laces, crepe de chine, chiffon cloths, taffeta and satin, black and white stripes, heavy China silk. Also voile and lingerie Waists. Some trimmed with hand embroidery and fine Venetian laces. Waists worth $5.00 to $7.50—at **$2.95** each.

Genuine Jusi Cloth 20c per yard

In every coloring, beautiful satin stripes and checks—a cloth suitable for summer frocks. Twenty yard pieces, that have sold at $12.50 per piece, on sale at **$4.00** per piece, or **20¢** yer yard.

$25 Tunics $8.95

40 handsome Parisian Beaded Unmade Tunics for dinner and evening robes. Regularly $20, $22.50 and $25. At **$8.95** each.

Also 150 Parisian separate beaded garnitures; worth to $5.00. At **$1.00** each.

Real Irish Neckwear at 50% Discount

Our collection of fine Real Irish Crochet Neckwear being very large, we desire to reduce the same. It comprises every desirable style of collar, yoke, collar and cuff sets, etc. Therefore during these ten days any piece can be bought at exactly one-half marked prices. An opportunity that will never again occur.

Neckwear that has sold $2.50 to $20.00 can be purchased at $1.25 to $10.00.

Send your name to add to our new mailing list—our new fall catalogue will soon be ready.

The above represent merely a fraction of the clearance reductions prevailing in every department. Write for any lines concerning which you are interested. Possibly the very articles you desire are being closed out. All merchandise delivered free of charge everywhere throughout the United States.

Stockton and O'Farrell — D. Samuels — Established 1851 — THE LACE HOUSE

D. Samuels — Established 1851 — THE LACE HOUSE

D. Samuels — Stockton and O'Farrell — THE LACE HOUSE

San Francisco, Cal.

REDWOOD
SILOS

That we have installed in California recently. Ask any or all of these owners why they chose them. All our Silos, Tanks and Pipes are made from clear, air dried Redwood---Nothing else used.

LET US BUILD YOURS

HEARST RANCH
PLEASANTON
14x30 Feet—97 Tons Capacity
Using Corn Ensilage
To Feed Pure Bred Dairy Stock

FOSTER STOCK FARM
HOPLAND
2-14x30 Feet—97 Tons Each
Using Alfalfa Ensilage
To Feed Thoroughbred Stock

UNIVERSITY FARM
DAVIS
12x36 Feet—85 Tons Capacity
Using All Crops
For Experimental Purposes

RANCHO DOS RIOS
MODESTO
20x36 Feet—224 Tons Capacity
Using Corn and Alfalfa Ensilage
To Feed Dairy Stock

SHELDON STOCK FARM
KENWOOD
20x40 Feet—250 Tons Capacity
Using Corn Ensilage
To Feed Fancy Stock

PANAMA-PACIFIC EXPOSITION
SAN FRANCISCO
16x36 Feet—154 Tons Capacity
Using Corn Ensilage
To Feed the World's Prize Cattle

REDWOOD
TANKS

FOR
WATER
WINE
OIL

All Sizes and Dimensions

FEEDING TROUGHS
WATERING TROUGHS

REDWOOD
PIPE

CONTINUOUS STAVE AND MACHINE BANDED

Let Our Engineers Figure Your Irrigation Problems and Give You Prices.

WRITE

REDWOOD MANUFACTURERS COMPANY

811 KOHL BLDG., SAN FRANCISCO

ORCHARD and FARM

HORTICULTURE
AGRICULTURE
VITICULTURE

ESTABLISHED 1888

IRRIGATION

STOCKRAISING
POULTRY AND
COUNTRY LIFE

Vol. XXVI--No. 9 Published by Country Life Publishing Co. September, 1914 Hearst Building, San Francisco, Cal. 50 Cents a Year

California State Lib. SACRAMENTO, CAL.

Pure Bred Hereford Cows and Calves Amid Pleasant Surroundings on One of California's Largest and Best Ranches.

Studebaker

The Report Is True—Here Are The Prices

UNDOUBTEDLY—along with the whole country—you have been amazed at the prices for the new Studebaker cars—$985 for a big, roomy touring car and $1,385 for a Studebaker "Six."

These would be extraordinary prices for just a "good" car.

What, then, can be said of these prices for a Studebaker car?

What, then, can be said of these prices when they carry with them the Studebaker name, the Studebaker reputation, the Studebaker character, the Studebaker guarantee—and Studebaker Quality?

It is too little to say they are extraordinary.

We believe these prices with Studebaker Quality are unprecedented.

Our fathers and grandfathers know the name Studebaker. For sixty-two years it has meant American vehicles honestly, sturdily made. For sixty-two years farm and city homes have known Studebaker as the name for dollar-for-dollar value.

These sixty-two years Studebaker has grown enormously—in reputation, in production, in prosperity.

To-day Studebaker means—in city and country—the acme of elegance as well as the acme of money-worth.

To-day we give Studebaker owners and Studebaker buyers the benefit of sixty-five years of Studebaker growth.

That growth has made possible Studebaker Quality at Studebaker prices—and has made them possible for these reasons:

First, there is the huge volume of Studebaker production.

During the last eighteen months 55,000 Studebaker cars have been manufactured and sold.

This is the largest number of cars of one make, selling at or above the Studebaker price, ever produced in the same period by any manufacturer.

Second, Studebaker cars are manufactured cars—manufactured in the Studebaker plants.

Studebaker motors, springs, bodies, tops, drop forgings are made in Studebaker plants.

Special formulae for Studebaker steels are worked out and the steels are tested and analyzed in Studebaker laboratories, probably the largest and most completely equipped in the motor car industry.

Studebaker gears, axle-shafts, front axles, all vital parts are manufactured and heat-treated in Studebaker plants.

Studebaker, we believe, manufactures a larger proportion of motor car parts than does any other motor car producer in this country.

The completeness of Studebaker manufacture of Studebaker cars means better, stronger, longer-wearing materials — consequently Studebaker Quality.

But in addition, it means the saving of the parts-maker's profit, the waste and extravagance of the "assembled" or semi-manufactured car.

And that, in turn, means the economies that make possible Studebaker prices.

The volume of Studebaker production and the completeness of Studebaker manufacture mean the Quality and the Profit that go back into the Studebaker car you buy.

The Studebaker has the double distinction—Unique in Quality and Unique in Price.

The Studebaker Car of 1915 is an impressive example of what square-dealing, good building and right-thinking among the American people can do in sixty-five years.

To-day the American people in town and country "Buy it Because It's a Studebaker."

The Studebaker Corporation of America
110 Piquette Ave., Detroit, Mich.

Specifications

The New SIX—5-Passenger and 7-Passenger

Electric Starter, Electric Lights.
Two body styles: Five-Passenger and Seven-Passenger Touring.
Wheelbase—121 inches.
Long-Stroke (5-inch), Small-Bore 3¼-inch) Motor; Six Cylinders, en Bloc.
Special Dimming Headlights.
Smokeless, Non-Leaking Lubrication System.
New Exhaust-Silencing Muffler.
Annular Piston Rings.
Cellular Radiator.
Crowned Fenders.
15 x 2½ in. brakes.
34 x 4-in. Goodrich Tires on Q. D. Demountable Rims; Safety Tread on Rear.
Extra Rim and Locking Tire Carrier.
Roomier Front and Rear Compartments.
Continuous Aluminum Footboard.
One-Man Type Top.
Built-in Rain and Clear Vision Ventilating Windshield, Attaching Rigidly to Top.
Scientific Anti-Rumble Gasoline Tank in Cowl.
Magnetic, Non-Leaking Gasoline Gauge, the only One Approved by Insurance Underwriters.
Full Floating Rear Axle, Shaft Locking into Taper at Hub. Timken Bearings.
Full Equipment of 13 Timken Roller Bearings.
Irreversible Steering Gear.
Inter-Locking Ignition and Lighting Switches.
20 Operations in Painting Bodies.

The New FOUR Roadster and Touring Car

Electric Starter, Electric Lights.
Two Body Styles: Five-Passenger Touring; Three-Passenger Roadster.
Wheelbase—108 inches.
Long-Stroke (5-inch), Small-Bore (3¼-inch) Motor; Four Cylinders, en Bloc, Exhaust Manifold Cast Separate.
Smokeless, Non-Leaking Lubrication System.
Special Dimming Headlights.
Pressed Steel Push-Rods.
Annular Piston Rings.
Tubular Radiator with Auxiliary Water Tank.
Crowned Fenders.
12 x 2½-in. Brakes.
Hot-Jacketed Schebler Carburetor Bolted to Cylinders.
Magnetic, Non-Leaking Gasoline Gauge, the Only One Approved by Insurance Underwriters.
Generous Footroom in Both Compartments.
33 x 4 in. Goodrich Tires on Q. D. Demountable Rims; Safety Tread on Rear.
One-Man Type Top.
Built-in Rain and Clear Vision Ventilating Windshield, Attaching Rigidly to Top.
Full Floating Rear Axle, Shaft Locking into Taper at Hub. Timken Bearings.
Full Equipment of 13 Timken Roller Bearings.
Irreversible Steering Gear.
Flush Dash Equipment.
Extra Rim and Locking Tire Carrier.
20 Operations in Painting Bodies.

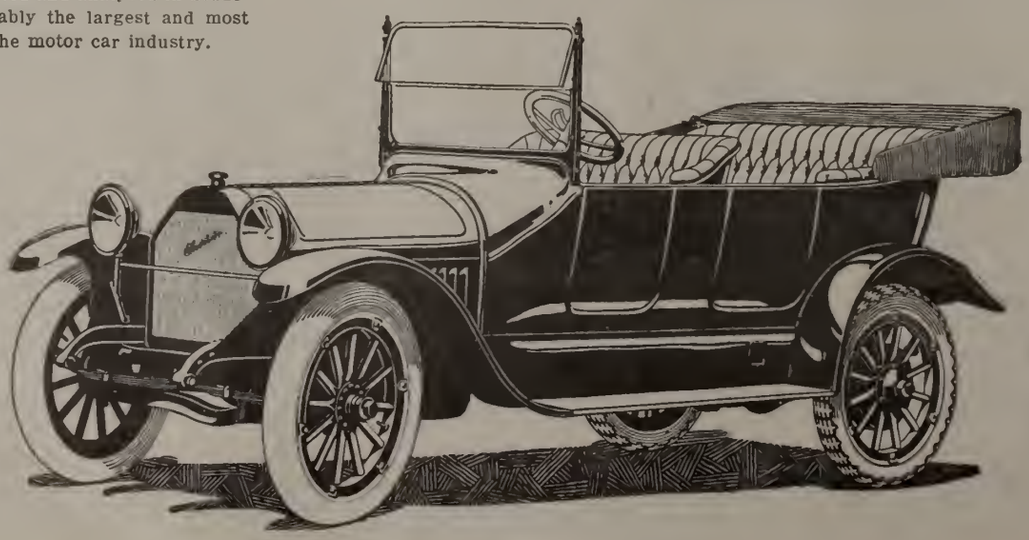
FOUR Touring Car

$985

(Three-Passenger FOUR Roadster, $985)

Electric Starter and Electric Lights

Extra Size Tires



SIX Five-Passenger

$1385

(Seven-Passenger, $1,450)

Electric Starter and Electric Lights

Completely Equipped

ORCHARD AND FARM
IRRIGATION

Vol. XXVI SEPTEMBER, 1914 No. 9

The "Big Idea" in Poultry Raising

By the Editor

This is the big idea in poultry raising—an idea for the general farmer, not for the specialized egg rancher except as he cares to note it. Here it is:

For any commercial success in egg production three great things are required, and a lot of things not so great: cleanliness (which will be ignored at present), animal food and an abundance of green food. Without either of the latter two the hens will fall off substantially in egg production. With them both reasonably good hens properly attended and kept clean and free from vermin are sure to lay well and be a success.

At a meeting of a live poultry association early in July, at which the topic for discussion was feeding, it was unanimously and vigorously agreed that the great problem before the poultryman who knew his business was animal food. Green food, cleanliness and the other details the wise poultry raiser could and would attend to. They do not in the correct sense of the word provide a problem for the poultry raiser.

The supply of animal food, or animal protein, is the biggest question before the poultry raiser to-day. Without beef scraps, fish meal, skim milk or some such material, the hens simply will not lay well. It is the absolute essential for commercial success. Alfalfa with lots of vegetable protein is not a substitute. At the same time the greatly increasing demand for beef scraps, whose value is being ever more appreciated, accompanies a decreasing supply, which the fish meal is not sufficient to make up, and unless the poultry raiser is careful as to the source of supply of his beef scraps, he is likely to get into trouble. The poultry raiser cannot do without beef scraps or fish meal, but the supply is less than the demand. So, WANTED—a cheap supply of animal food for poultry.

Nothing in the way of animal food for fowls, the poultry raisers at the association meeting unanimously agreed, was equal to skim milk, few things were more scarce on the ordinary poultry ranch.

What is more abundant in irrigated California than alfalfa, or easier provided, to give fine green feed all the years round? What next is more abundant in the alfalfa districts than skim milk, or cheaper? All the skim milk that the fowls want at small cost, green pasture all the year round for almost nothing; there are the two great essentials for heavy egg production; there is the big idea in its simplest form!

Let us follow out that idea a little further before telling how and where it is being put into effect. What is most needed by the average farmer in California and elsewhere? Something to take part of his time all the year round and to bring in some income all the year round. That something, the hen. The new poultry raising is for the farmer who has alfalfa and a few cows. It will be an immense help to him in providing another source of income and a steady income, too.

Also, who can produce eggs the cheaper: the man who raises only hens and buys all his feed, except a little green feed, or the farmer with a general farm and a lot of material for the fowls that would otherwise be wasted? The latter, of course. It is expense and only expense to be selling one thing from the farm all the time and buying something else, say wheat and other poultry feed, and the minimum expense and the least cost of production is with the man who raises most of what he uses and sells as high a finished product as possible—cream, for example, instead of alfalfa hay, eggs instead of alfalfa and Egyptian corn.

Outdoor Laying House on W. C. Carpenter Ranch, Grain Straw on Floor, Oil-Can Laying Boxes Above.

And so, minimum expense and minimum cost of egg production comes on the ranch of the man that has plenty of skim milk and plenty alfalfa pasture on his ranch for his hens. Both of these are the two great essentials in getting hens to lay properly; one provides the greatest difficulty now found on the specialized egg farm.

There is one place in California where this big idea in egg production has taken hold and that is in Tulare county around the town of Tulare, though it is doubtful if the farmers who are practicing the big idea really know that it is a big idea. It came for two great reasons. The first is that Tulare is a great dairying town, with thousands of cows to provide the skim milk and thousands of acres to provide the alfalfa pasture. Those were the natural advantages.

The second great reason was the founding of the Tulare Co-operative Poultry Association, which actually is the institution that started all the progress. Before it was organized there was no poultry except the scrub fowls, poorly cared for, found on every farm everywhere. Feed purchased was at full retailers' prices, or the fowls looked after themselves. Eggs sold were for country store prices, or about six to ten cents below quotation. Owing to the indifferent care of the eggs, they were not worth much more as an average, but clearly no industry is going to make progress when there is no money in it.

This association was started in May, 1913, with forty members, a membership costing $25, the object being to purchase supplies for the members at cost and to sell eggs and poultry at cost. Most of the members belonged to the Dairymen's Co-operative Creamery of Tulare and were firmly convinced of the merits of co-operation. There were 110 members by August 1, 1914, and the association was doing a business of $6,000 per month for the four months previous. Besides the buying business of feeds, supplies, etc., and the selling of some poultry, the association sold 16,000 dozen eggs in March, 13,000 dozen in April, 12,000 dozen in May, 11,000 dozen in June and 8,000 dozen in July, which will indicate the substantial growth of the business and the great increase in the poultry industry. The members attribute the boom in poultry raising to the good prices they get for the eggs. It is equally due to the skim milk and alfalfa pasture, for the poultry business has often languished where there has been no skim milk and alfalfa pasture. Here it has jumped ahead with these advantages and the advantages of poultry production on the general farm. More will be said about the association in a later issue.

As to the suitability of the alfalfa and skim milk land and climate for commercial egg production, the Whitehead Brothers of Los Angeles, who handle the eggs, write that they depend upon Tulare eggs for fancy trade, which is quite a compliment considering the old prejudice against valley eggs. The prejudice has been due to poor quality resulting from indifferent feeding, the keeping of roosters in summer, poor handling in hot weather, and negligence all around.

The advantages of the district for egg production according to the lines previously outlined, when combined with proper marketing, have caused Visalia poultry raisers to organize an association likewise along similar lines to the Tulare association, securing as manager M. M. Bottreill, leading organizer of the Tulare association and until recently manager of the same. Since his departure the Tulare association has been ably managed by I. N. Foss, the former secretary.

Both are making rapid progress. Similarly, as the success of such poultry raising and marketing is seen, the poultry industry will spread along these lines until the whole of irrigated California finds the poultry a leading feature on almost every farm where cows and alfalfa are kept, not a side issue, but a well conducted and profitable proposition.

As a general rule, on the ranches where eggs are produced as described almost everything the chickens eat is raised. They first have the alfalfa and skim milk, and a more or less free range to pick up insects and odds and ends. Egyptian corn is in its glory in this vicinity and most every farmer raises some Gyp corn or milo, the former growing best, but the latter being frequently preferred, as the heads are more compact and less troubled by birds. Nearly every farmer also grows a patch of wheat, which is fed in the straw, giving grain and scratch material. Wheat grain is also bought, as it is unwise to depend upon corn, and also shell, charcoal and what incidentals are needed.

No definite rule as to amount of milk required per hen for satisfactory results appears to be known. The milk from one cow for 100 fowls is evidently more than enough. Henry Wattenberg has a ten-acre place northwest of Tulare and keeps four cows, three of which are now milking, and about 350 fowls, besides some young roosters being fattened for the market. Of the others, 125 are grown hens. From the three cows there are eight to nine gallons of skim milk per day and the hens just clean it up, which is not saying that the same amount might not do for two or three times as many fowls and still make them lay well.

Contrary to general custom, this milk is fed, whole and fresh. The general rule elsewhere is to clabber it, the whey being mostly wasted, which does not seem economical. Directly after separating the milk it is poured in a wooden trough in the poultry yard and the fowls take it as they wish. Mr. Wattenberg was told that this plan was all wrong and bad for the hens, but it has proved a big success. Nothing is wasted and the trough is cleaned thoroughly each day so that no flies breed.

From the afternoon's milk a little is usually left next morning, which is fed to the one hog. The morning's milk is usually cleaned up by mid-afternoon.

Of the ten acres on this place, five and one-half are in alfalfa, which keeps the cows and the chickens. There is also a couple of acres of Tuscan peaches and garden for house and corn for cattle. The remainder is used for house, barns and poultry. It is irrigated from a pumping plant

(Continued on Page 31).

Fruit Production in the Sierra Foothills

Leaving out the missions established by the Franciscan fathers and, perhaps, the early Russian trading stations of Sonoma county, the gold country of the Sierra foothills saw the establishment of the first horticulture of California. This was a different horticulture from that of the missions. One had as a basis the vine, fig and olive of the hot, dry countries of the world, the other the apple and the pear of the northern and temperate climes.

Those are the leading fruits to-day, pears being of much greater importance commercially than any other fruit where transportation is convenient, and apples leading only where far distant from transportation, apple orchards under those conditions being a heritage from the mining days.

The account herein given is based on observation in the leading fruit districts of El Dorado county, where conditions resemble those of Grass Valley and similar situations in Nevada county, and Colfax in Placer. The great fruit section around Newcastle and Auburn in Placer county is at a much lower elevation and in quite different surroundings.

Fruit growing in these gold districts began with the first great influx of gold seekers from the Eastern States. Many of these brought small trees with them and others brought seeds, from which many seedling trees. Wherever a mining settlement was established there was, and is, sure to be one or more small apple orchards and perhaps some pear, peach, plum and cherry trees as well. Such trees throve, for they were in natural fruit climate and country, as in a temperate climate a wooded country is quite sure to make a natural fruit annd berry section.

Apple trees of unsurpassed size and vigor can be found here and there nearly all over the mining country. The pear trees are generally much smaller in proportion to age than pear trees in the valley below, say along the Sacramento river, but the climate and production are so thoroughly satisfactory for pears that they have become the leading commercial fruit. Likewise in good rich soil with plenty of moisture pear trees of remarkable size are also often found.

The advantages of a naturally fine fruit climate and soils are made apparent by an extremely high color and a high flavor to all fruits, apples, pears, plums and peaches.

For many years fruit was used simply to supply the local population of miners and lumbermen, and when the numbers of these diminished so that there was a surplus, the quality of the fruit justified hauling out long distances. As long as the fruit was there, it was better to go to the expense of hauling it out than letting it rot. Even earlier than 1888, at which time the railroad reached Placerville, fruit had been hauled to the railroad miles below and even to Sacramento. The coming of the railroad naturally helped a good deal and farmers with fruit did well until the hard times of 1893 and a few years following.

As times became better the canners made five-year contracts for nearly all the pears available at $20 per ton, but before those contracts ran out pears had gone to $40 and $45 and by 1907 prices had reached $60 per ton for first-class fruit. Since that time shipping to the Eastern markets has proved so highly satisfactory to the growers that the canners have been unable to buy pears, though this season they have been nibbling at the market again.

Up until about ten or a dozen years ago there was comparatively little done except to care for old orchards, but as prices advanced, new planting developed, which continued so that there has been a big increase of acreage during the last four years, which bids fair to continue for a long time to come.

Shipping prunes and plums follow pears in new plantings, then come shipping peaches, and finally apples.

J. E. Hassler Beside One of His Fine Bartlett Pear Trees.

The latter are perhaps adapted best of all by nature to the location, but the markets are not good enough to encourage much new planting. Possibly the building of a reputation with a select trade may change this condition later, for a highly colored and finely flavored apple is welcomed in California markets.

In early days it was firmly believed that the mountain fruit, though it might be excellent for the cannery, would not ship well. The idea was a natural result of careless handling along the same lines used when fruit was put in any old box and sold any old way only a few miles distant. An increased price resulted in increased care so that the orchards are mostly given the best of care and fruit is handled in the most careful manner also.

Several years ago fruit growers and shippers at Placerville, from which all El Dorado county fruit leaves by train, organized a standardization unit, and every lot of fruit going out is carefully inspected before it is permitted to leave. If it does not come up to the requirements adopted in the district it is refused and has to be repacked. As a result the quality of fruit and its reputation in the markets are excellent.

Last winter the fruit growers of the Placerville district organized a Farmers' Club, which held frequent meetings that were addressed by agricultural men of the University of California and by fruit experts from elsewhere. The whole attitude of the district appears to be toward progress and to the best methods of fruit production and soil handling that can be found.

Likewise spraying is done consistently, in spite of the fact that so many orchards are small and merely a memento of former days. It is not many years since no spraying was done, but now, largely through the personal work of County Horticultural Commissioner J. E. Hassler, practically every owner of pear and apple trees sprays for the codling moth and sometimes for scab. Three sprayings are all that is ever needed for the moth, even on late apples and some years, of which this seems to be one, two sprayings give complete control.

In the years preceding 1907 scab was becoming worse and worse, and spraying was only of moderate avail against it. That spring, early, it rained heavily and long, then cleared up early and long and apparently it cleaned out the scab thoroughly. Here and there a scabby apple can be found, but they are scarce and amount to very little.

The pear blight also, which is the greatest thing every prospective pear grower in the country has to consider, is conspicuous by its absence. A few years ago it got in and was fairly well established, but a mountain country is not as much of a blight country as a hot, level valley. Horticultural Commissioner Hassler succeeded in getting every owner of blighted trees to cut it out and there is practically none in the county now. In trips over a very large part of the fruit-growing sections of the county the writer was unable to see a blighted twig.

As has been mentioned, the pear trees are not as large or as vigorous as those on the Sacramento river, though healthy and very fine looking. They have a correspondingly slower growth and for the first six or seven years it is considered proper to remove all fruit and to have the tree make only growth. After the tree starts in bearing, wood growth is moderate, hence the reason for encouraging growth alone for a long time and not until the seventh or eighth season ought the grower expect a pear orchard to get down to business. The first bearing year on a satisfactory location 80 boxes per acre would be a reasonable crop to expect, while an old good-bearing orchard in a good year will produce 12 tons of merchantable pears per acre. J. E. Hassler has a block of 84 trees, about two-thirds of an acre, that one year produced eight and a half tons.

These pears come in just when the market is at its best; right after the valley pears are gone and before the Oregon pears are ready. The pears have a very red cheek. There are three pickings: the first to lighten the tree; the second, about a week later, because much of the fruit is ready, and the third a week later still.

These pears have sold as high as $4 per box. The growers received f. o. b. Placerville last year $1.75 per box for the season. And if ever the market slows up in the East the canners are waiting to buy and the dried fruit men to take what the canners will leave. Is there any reason for wondering why Bartlett pears are almost a synonym for fruit in El Dorado county?

Shipping plums are not far behind Bartlett pears, and they, likewise, are profitable owing to their excellent quality. They come into the market behind most California plums. The Grand Duke and the Gros Prune are the two leading varieties, though quite a number of varieties are grown in minor amount. The plum as a rule comes into bearing a couple of years sooner than the Bartlett pear.

Shipping peaches are also planted somewhat. The quality is excellent, but owing to the elevation, they likewise ripen much too late for the early markets.

Apples have already been mentioned. Other fruits are inconspicuous at present commercially. Cherry trees are fine looking and are said to be excellent producers, though few are grown. Die-back, so common over much of the State this year, can only be seen where the worst kind of neglect has been given.

Sprinkled all over the mining regions are black walnut trees, a great number of which have been worker over to English walnuts, preferably Franquette and other late blooming varieties. The walnut trees in size fall far behind those of Santa Barbara or of rich valley land trees, but seem to feel fully at home, and walnut production deserves development, though as a side issue rather than a leading industry.

As a great number of the early miners were Italians, chestnut trees are almost as common as black walnuts and grow finely. Either price or productivity seems to be unsatisfactory, for no effort is made to grow more. Near every cabin where Italian miners have lived, though it may be miles from an occupied settlement, can be seen a chestnut tree or two close by, a covered porch or trellis before the door, and grape vine covering it. Though it may have been decades since cabin or yard had been

(Continued on Page 36).

How to Raise Pigs on Alfalfa Pasture

In spite of the way that alfalfa and hogs are supposed to go together in the irrigated West, pork production is far behind what would reasonably be expected and does not approach the standing of pork production from corn in the Middle West. And yet it is perfectly true that alfalfa is richer in protein and ash and furnishes more nearly a balanced ration than almost all other forage crops; likewise that alfalfa is just about the cheapest fodder to be produced in large quantities that there is.

To make the proper success of hogs on alfalfa with these naturally great advantages of the plant it, therefore, is necessary to handle the hogs in the right way. Yet it is safe to say that in the great majority of cases farmers who do raise hogs with alfalfa as the foundation never stopped to figure whether they were pursuing the best course or not. In fact, almost nothing has been done to determine accurately just what way alfalfa does give the best results with hogs. The New Mexico Experiment Station has just published a bulletin on this subject that ought to fill a long felt want wherever alfalfa and skim milk are the leading food for swine.

These experiments were designed to show: first, the value of alfalfa pasture and to determine if it were profitable or not to grow or to attempt to fatten young pigs on alfalfa pasture alone; second, whether light or heavier grain rations were most economical in raising pigs on alfalfa pasture; third, whether lard or bacon types did best on alfalfa and supplementary feeds; fourth, to make a comparison of skim milk and ground wheat for growing pigs on alfalfa pasture; fifth, to determine how best to increase the value of skim milk (with alfalfa) by the addition of grain.

Pasture Management.

Before touching these experiments the proper pasture management of hogs on alfalfa, as given in the bulletin reporting results, will be well to mention. The method of handling suggested will keep the alfalfa tender and palatable and in such condition that the pigs will eat the most of it and give the best results. If pastured when too young, alfalfa contains so large a per cent of water that the pig cannot eat enough for proper nourishment. A pasture too closely grazed gives the same result. The method of management should make sure that there is always an abundant supply of fresh, tender alfalfa, sufficiently well grown to contain a good supply of nutrients. It is always better to under graze than to over graze. The common mistake is to overstock a pasture.

In preparation for pasturing pigs, an abundant water supply, plenty of shade, and convenient arrangements for feeding must be provided. Any neglect in either of the first two may result disastrously. During the heat of summer, water must be provided for a wallow or to keep the ground wet under the shades, as well as for drinking purposes, for during the heat of the day the pigs will spend the time either in the shade or wallow, in an effort to keep cool. If shut out from both of these, even for a few hours, at such time, the result may prove fatal.

The pasture should be divided into at least two divisions, arranged for convenient irrigation separately, and they should be used alternately, the pigs remaining in each from 10 to 14 days. It should be stocked lightly enough so that mowing may be necessary at times. Such arrangement will reduce the rooting to the minimum and keep the pasture free from weeds and woody, tough alfalfa. It is best not to turn on to the pasture in the spring or after an irrigation until there is substantial growth five or six inches high, and it will pay, when pigs are changed from one part of the pasture to another, to run over it with a mower before irrigating, even though no hay of consequence is obtained; for it will take off all the older growth left by the pigs and give better opportunity for the new. If overstocked, there is greater danger of damage from rooting. Fields of alfalfa have at times been destroyed in this way.

Experiment I.

In the first experiment the pigs were divided into four lots, one being given pasture alone; a second, pasture and a pound of grain per 82 pounds live weight; third, pasture and two pounds of grain; fourth, pasture and eight pounds of skim milk, which was figured to correspond fairly well with the one pound of grain. The average gain per head in the period extending 65 days was: Lot 1, 16.5 lbs.; Lot 2, 43 lbs.; Lot 3, 48 lbs.; Lot 4, 39 pounds. There were in the pasture 3.5 acres, 32 pigs being fed thereon, with the addition of other food named. The advantages of the different feeding shows pretty clearly at a glance.

The value of the grain and milk fed influences results, so that although Lot 3 made the greatest gain, Lot 2 was actually the most profitable. Although the skim milk fed was supposed to be equivalent to the pound of grain received by Lot 2, it can be seen that with alfalfa pasture it was much less valuable. With grain at $1.50 per hundred, it is said, skim milk would be worth about 15 cents per hundred, according to the results secured in this test. This result corresponds to the theory of the proposition, which is that skim milk chemically is too much like alfalfa to have its highest value when fed in connection with alfalfa. It can also be seen that alfalfa alone gave very poor results.

Experiment 2.

In experiment 2, to find the best amount of grain to go with alfalfa, ¾ to 1 pound of grain was fed for 85 pounds live weight of hog in Lot 1. Lot 2 received ¼ to ¾ pounds of grain; Lot 3, 5 to 6 pounds of skim milk, on the supposition that seven pounds of milk were equivalent in ordinary circumstances to one pound of grain. This experiment ran from May 1 to October 1, a period of 153 days. Tamworths, Durocs and Yorkshires were used in the experiment. Lot 1 made an average gain of 76 pounds; Lot 2, 58 pounds; Lot 3, 62 pounds. Lot 3 in this case proved the most profitable, as the cost per pound of gain was 3.81 cents, 4 to 7 pounds of skim milk being practically as expensive as ½ to 1 pound of grain (shelled corn in this experiment), but giving considerably more gain in weight.

It might be mentioned that the results were less favorable than they would have been if the Yorkshires had not been present, this breed evidently requiring finer feeding than this for the best results. The Durocs, which are lard hogs, as are most raised in California, made 242, 121 and 220 pounds gain in the different kinds of feeding. Tamworths made 271, 200 and 138 pounds gain; Yorkshires 168, 142 and 135 pounds in the different lots. As between the Tamworths and Durocs, or bacon and lard hog, the skim milk feeding appears to be the thing for the lard hog, also the lard hog appears to need grain or other supplements to alfalfa even more than the bacon hog.

Experiment 3.

Experiment 3 was only a breed test experiment, alfalfa pasture being supplemented with from 2 to 3 or 3½ pounds of skim milk per hog, the amount being increased proportionately to the weight of the hogs. This experiment ran 126 days, the average gain of the Tamworths being 49.6 lbs. and of the Durocs 42.3 lbs., emphasizing what was shown in previous experiments, that when little additional feed to alfalfa was given, the bacon hog made greater gains than the lard hog. The gain of the Tamworths was made at 30 cents less per hundred than that of the Durocs, it costing $4.28 for 100 pounds of gain among the Tamworths and $4.58 among the Durocs. This experiment emphasizes what was learned before—that the best results are not to be expected with such small amounts of feed to supplement alfalfa.

Experiment 4.

This experiment was designed to compare skim milk with ground wheat for pigs on alfalfa; also to give some comparison of breeds. It continued only 59 days. Lot 1 received 4 to 6 pounds of skim milk per head per day; Lot 2, ¾ to 1 pound of ground wheat per day; Lot 3, 1 part skim milk to 6 parts ground wheat, going from 2 pounds of skim milk and ¼ pound of ground wheat to 3 pounds of skim milk and ½ pound of wheat. Skim milk was estimated at 6 pounds, equaling 1 pound of wheat.

The average gain of Lot 1 was 25.1 pounds; Lot 2, 33.7 pounds; Lot 3, 30.2 pounds. The estimated returns per acre for a term of six months was, for Lot 1, $43.50; Lot 2, $59.28; Lot 3, $53.22.

In Lot 1, receiving skim milk, the cross-bred Duroc-Tamworths were first, the Durocs second, the cross-bred Yorkshire-Tamworths third, and the Tamworths last.

In Lot 2, receiving ground wheat, the Tamworths were first, Durocs second, cross-bred Duroc-Tamworths third, and Yorkshire-Tamworths last.

In Lot 3, receiving skim milk plus ground wheat, the cross-bred Duroc-Tamworths were first, Durocs second, cross-bred Yorkshire-Tamworths third, and Tamworths last.

The test shows ground wheat to be a very good and economical supplementary feed for alfalfa pasture. It shows skim milk to make a fair supplement to alfalfa pasture, but not worth over 17 cents per hundred where ground wheat is worth $1.32 per hundred.

Experiment 5.

This experiment showed results of feeding varying amounts of different materials. Lot 1 received from 4 to 6½ pounds of skim milk per day; Lot 2, 2 to 3 1-3 pounds of skim milk and ¼ to ¾ pounds of milo; Lot 3, 2 to 3 1-3 pounds of skim milk and ¼ to ¾ pounds of milo, the experiment running 120 days. It was the intention to fed the amount of grain, or its equivalent in skim milk, that would produce the cheapest gains and leave the most for the pasture. Lot 1 made an average gain of 30.55 pounds; Lot 2, 33.11 pounds; Lot 3, 34.55 pounds in period mentioned. Estimated returns for the alfalfa per acre for a period of six months were for Lot 1, $37.14; Lot 2, $43.98; Lot 3, $42.54.

The conclusions are: Although skim and alfalfa pasture are practically the same kind of feed, being nitrogenous and bulky, they will give a fair profit. Ground milo, which is a carbonaceous, concentrated feed, gives greatest returns with skim milk. By supplementing alfalfa with skim milk and milo, pork was produced 62 cents per hundred cheaper than when skim milk alone was used; and the milo also gave $6.16 more per acre of pasture for the season.

General Summary.

The general summary for all of the experiments above is given herewith.

The cost of pork production may be materially reduced by the use of alfalfa pasture in connection with a part ration of concentrated food. Mature hogs may be maintained in fair condition on pasture alone, but growing pigs make very unsatisfactory gains and become stunted when they are required to live on alfalfa pasture without supplementary feed. It is neither a satisfactory nor a profitable means of fattening for growing pigs.

The largest returns per acre for alfalfa pasture were received from the lots having a skim milk ration with a small amount of grain.

Skim milk alone proved to be a fairly good supplement to alfalfa pasture, for growing pigs, and when used in this way eight pounds of skim milk were practically equivalent to one pound of grain. Better results, however, were secured by feeding a little grain along with the skim milk. Good results were also obtained by feeding a small grain ration without other supplementary feed, in conjunction with alfalfa pasture.

The results indicate that for six months' pasturing, supplemented with a medium ration of concentrated food, a gain of 782 pounds per acre may be credited to the alfalfa pasture. They also indicate that pigs on good pasture should be fed about one pound of grain per 100 pounds live weight per day.

The bacon type of hog seems better adapted to grazing than the lard type. The Tamworths made better gains per head than any of the other breeds in the experiment, and at a lower cost; but the cross-bred Duroc-Tamworths excelled the pure-breds and all others as feeders.

Shades that permit free air circulation, convenient arrangements for feeding, and a plentiful water supply are essential to good pasture conditions.

The alternate pasturing of fields gives the pasture periods of rest, during which it may be irrigated and given an opportunity to start a new rapid growth and furnish more feed than if pastured continuously.

The number of hogs that an acre of pasture will maintain depends principally on the quality and the care of the pasture, the quantity and character of the supplementary feed and the size of the hogs. It runs from eight to sixteen head.

When early maturity and quality are important considerations, the best results come from liberal feeding on alfalfa pasture.

With the present high prices of grains, pigs with an abundant supply of good alfalfa pasture make most economical gains when given a daily ration of about one pound of grain to 100 pounds live weight. They make larger gains, better hogs, and mature quicker if given grain ration, but the profit may be less; hence the size of the grain ration will depend on the price of grain, the kind of pasture and the age at which the hogs are to be marketed.

The results of these tests tend to emphasize what experiments show elsewhere regarding the extent to which alfalfa may be relied on in pork production. They show that a small ration of milk or grain is essential in connection with alfalfa pasture to make satisfactory gains.

Mistakes in pig feeding are costly. In the short life of the pig there is little time to correct mistakes.

A New and Valuable Cling Peach

The cling peach, commercially considered, may almost be said to be a California development, for, although grown somewhat elsewhere, it is only in California that it has achieved great prominence. While the freestone varieties are the peaches for fresh consumption and for drying, the cling is pre-eminently the canning fruit, admitting of no rivalry from the best freestones.

Although this is the case, it is a little queer that a sufficient assortment of thoroughly satisfactory cling varieties have not been developed. In fact, only the Tuscans and Phillips merit special attention now. The orange cling, once a standby, has largely gone out of use on account of inferior quality and consequent low price. The Tuscan, very popular just now, owes most of its value to the fact that it is so early that it comes to the cannery at a time when they can handle it to excellent advantage, and, although inferior to the Phillips in quality, as might be expected from the fact that it is so early, though still a very good peach it is now usually bringing a better price than the Phillips. The latter is the only thoroughly satisfactory cling peach in quality and productivity and there is a gap of about three weeks between that and the Tuscans, only taken up in part by the Orange, which is no longer planted on account of its quality.

Selma, a dozen miles south of Fresno, boasts in being "The Home of the Peach," although probably Yuba City deserves to be called the home of the Phillips cling. Located here is the cannery of Libby, McNeill & Libby, one of the largest and best equipped canneries of the State and handling an immense amount of peaches. The past three years this cannery has been using a new peach by J. H. Peak and called, after him, the Peak cling. The manager, W. G. Nash, is recommending this as a variety of equal merit with the Phillips in regard to quality and very valuable on account of coming in just after the Tuscans and just before the Phillips. It thus gives the opportunity for a continual run of peaches, filling in the present gap between Phillips and Tuscans with a fruit of fine quality. At the present time there is just the Peak orchard of four and a half acres to provide fruit, but the cannery is making efforts to have the acreage extended.

The price paid on a contract with Mr. Peak is $25 per ton, as compared with general prices of about $22.50 for Phillips and $22.50 to $25 for Tuscans. The higher price of the latter, in spite of rather poorer quality, is, of course, due to the fact that it comes in at a time when it is needed. Once the demand is well supplied, evidently the price will be lower than that of the Phillips, which is the cling of standard merit.

The cannery received its last lot of Tuscans August 3, this year and on the same day received the first lot of Peaks for the season, showing how nicely the seasons meet. Owing to the small acreage of the latter they have all been used before any test was made of their lasting qualities, but from all appearances and from tests with a few peaches, it is a keeper just like the Phillips. In fact, it is practically identical with the latter in quality, both fresh and canned, has same color and texture of flesh, though a redder skin, small pit and so on down the line. In vigor of growth and productivity it is also on a par with the Phillips, though the orchard through lack of water the past two years and apparently indifferent care is below standard, except in spots, where moisture supplies have been ample.

The variety is, of course, an accident. Mr. Peak, who is a contractor by trade, seven years ago set out a vineyard and orchard a little southeast of Selma, and not securing enough Phillips cling peaches to fill out the acreage, planted seedlings and put in June buds. On one of these of three main branches, the two larger ones were from below the bud, a fact that was overlooked on account of resemblance to the Phillips until the tree began to bear, when it was seen that the skin was redder and the fruit ripened two weeks before the rest of the orchard. The other trees were then worked over, after opinions of canners and others were secured, and the variety now bids fair to take its place as one of the standard varieties.

Note—The photograph for accompanying illustration was provided by the Kirkman Nursery Company.

The New Peak Clingstone Peach, Pit Shown on Right.

BULLETIN ON APPLE MILDEW

The United States Department of Agriculture has issued a new bulletin (No. 120) on "Apple Powdery Mildew and Its Control in the Pajaro Valley (California)." It outlines three distinct phases of control method, as follows:

(1)—Foliage spraying with iron sulphid mixture, precipitated sulphur, or sulphur in some other very finely divided form. (2)—Winter pruning of trees for the purpose of obtaining the general stimulating effects that come from pruning at that time and directed particularly toward the eradication of mildewed twigs. (3)—Winter spraying with some spray that has the effect of inducing a vigorous foliage growth in the spring. By consistently practicing summer spraying year after ear a much improved condition of the trees will be obtained, but for the best results the entire method, as outlined above, must be followed. Although the advice is intended only for the Pajaro Valley, it is believed that it will be good, with modifications, for many other apple-growing sections.

After this, to obtain a high school teacher's certificate in agriculture from the University of California, a person must specialize in agriculture, cover all leading branches of same, and take a special six weeks' course at the University Farm at Davis, doing practical farm work of all kinds.

Installation of Pumping Machinery

Satisfactory results from pumping machinery for irrigation purposes depend to a great extent upon its careful installation and operation. The following are some of the important points to bear in mind:

Suitable foundations are necessary for satisfactory continuous operation. The foundation may consist of any material, so long as it is stiff enough to support the bed plate at all points and maintain proper alignment of the shafts if they are not otherwise properly supported.

If the pump and driving motor or engine are mounted upon the bedplate and coupled together they should be placed upon the foundation with suitable wedge under each end. The middle of the bed-plate should be raised or lowered as necessary, until the edges and faces of couplings exactly agree. Both pump and motor should run freely when separate, and when coupled together with the bolts. The bed-plate should then be grouted into place, so that it is absolutely rigid. The suction and discharge piping can then be connected. These pipes should be a size or two larger than the suction and discharge opening of the pump if they are of any great length. Care should be taken to see that there are no air pockets in the suction well, as there is less trouble in priming the pump and less liability of air leakage in the suction pipe when the suction lift is small.

To prevent air leakage through the stuffing box on the suction head of the pump there should be provided a gland cage within the stuffing box, on each side of which there should be placed about three rings of graphite packing. On the outside of the stuffing box should be a ¼-inch pipe tap, which connects to this gland cage. There should be a pipe tap, thus making a water seal in the stuffing box and preventing all air leakage. The gland should be run just as loose as possible, as otherwise the packing is liable to cut the shaft. A small amount of leakage from the stuffing box does not harm, in fact, is an advantage, as it prevents the packing from heating and at the same time keeps the shaft lubricated.

The pump should always be primed before starting, as otherwise there is liability of injuring some of the interior parts of the pump, which depends upon the presence of water for lubrication. The pump can be primed either by closing the discharge by means of a gate or check valve, and exhausting the air from the pump by means of an ejector or air pump, thus allowing the water to flow in from the suction well, or a foot valve can be provided on the suction pipe and the pump filled with water, at the same time allowing the air to escape from the highest point of the pump.

Before starting for the first time it is advisable to clean out the bearings thoroughly, including the thrust bearing, by pouring in kerosene and allowing it run out at the bottom, as dirt and other substances are liable to get into the bearings during shipment. The bearing should then be filled as full as possible with first-class lubricating oil similar to dynamo oil. After priming, the pump can be started up and brought up to speed with the discharge valve closed. The discharge valve can then be immediately opened until the desired quantity of water is obtained. If the total head is greater than that for which the pump was designed, the quantity of water discharged will be less than ful capacity, and may even be nothing at all if the head is enough greater. The power will also be less than the power required for the head for which the pump was designed. If the total head is less than the head for which the pump is designed, the amount of water will be greater than the normal capacity of the pump and the power consumed will also be greater.

The pumps can always be run on reduced heads by throttling the discharge until the desired quantity of water is obtained. This creates an artificial head and reduces the efficiency of the pumping, but will prevent overloading the motor.—Irrigation Age.

SUCCESS WITH OLIVE CUTTINGS.

It is difficult to secure a very high percentage of growth of olive cuttings, but David Harris of the Poplar district, Tulare county, has averaged 75 to 80 per cent with 15,000 set out in the middle of April this year by putting them in wet sand as soon as they were cut.

The cuttings were made in the Porterville district, and on account of the delay necessary before they could be planted it was decided to try to keep them in specially good condition by putting them in wet sand immediately instead of taking them to Poplar loose.

Shallow boxes about four inches deep were made, filled with wet sand and taken to the trees and the cuttings put in immediately. Two eye cuttings were made, about four inches long, and these were put in the sand about three inches deep. They were then taken to the ranch and placed in the propagating boxes with fresh stable manure at the bottom for heat and sand on top. The cut surfaces were thus hardly exposed to the air at all. Some boxes came through with almost 100 per cent live cuttings, the lowest being about 60 per cent, which of itself is exceptionally good.

Mr. Harris had no previous experience in this kind of work, but studied the matter up thoroughly before starting it and tried the wet sand on the advice of A. A. Jenkins of Porterville, who made the cuttings for him.

There were 175 cars of grapes shipped from the Imperial Valley this season up to August 5. Prices were good. About 4,500 cars of canteloupes were shipped. The crop was light on account of aphis and prices poor.

The California Associated Raisin Company

Years ago Miles Standish is said to have remarked: "If you want a thing done right, do it yourself," then he sent off another man to propose for him. More than ten years ago, when the raisin business was in a very bad way, the raisin growers followed the advice of Standish by deciding that the only way to have raisins sold right and at decent prices was to sell them themselves, or in an organization. After proving the correctness of the idea, the association blew up in an historic smash that has only been cleared up in the courts a few months since, and the growers let the packers sell the raisins for them, with consequent bad results. The industry since then has had its ups and downs, mostly downs; prices have quite often been thoroughly unsatisfactory, and only occasionally such as the growers should receive.

The California Associated Raisin Company is the thing that has saved the industry from at least a series of years of demoralization, which would have made a radical decrease in bearing acreage and production until such a time as reduced output and the survival of the fittest had evened up prices and the cost of production. Instead of this unfortunate situation developing, prices are satisfactory and contracts insure satisfaction to the growers for at least four more years to come, land owners are justified in making new plantings where the land is suitable for raisins and the grower can feel encouraged to go to every reasonable expense to improve his raisin vineyard. Likewise raisin buyers have occasion to feel thoroughly satisfied with prices from their standpoint.

This California Associated Raisin Company is so radically different from all other great growers' marketing organizations in California and the United States that its success is being intently watched all over the country and it is being looked to as a possible model for other organizations to rescue agricultural products which cannot be sold at decent prices under the present system of operation.

The Raisin Association was started as a capital stock corporation a year ago last April. It overcame the greatest of difficulties in marketing the first season's crop, returned to growers everything that they could have expected under ordinary conditions and enough in addition to pay the full capital stock of the corporation and a reasonable profit to everybody, and is in first-class condition, besides leaving also the raisin market in better condition than it has been for years. This organization could be wiped out of existence to-day and all its property totally destroyed, yet the extra price obtained by the growers for their raisins of last year would have paid all expenses in full. That indicates what it accomplished.

There is this year a large crop of raisins coming on. It has been stated that this season is the critical season in showing the strength of the organization, but only a brief glance at things shows that if the association could win out as it did in 1913, under the conditions that faced it at the start, the coming season should be smooth sailing. First, however, a little about the method of organization would be in order as an explanation for the rest.

This California Associated Raisin Company was started as a "Million Dollar Company." The capital stock was to be $1,000,000, subscribed by growers or others desiring the welfare of the raisin industry, on a basis of $10 per acre of raisins, the latter being merely a suggestion, some growers subscribing for more, others less, others not at all, and a number of others taking stock although owning no vineyards. The company was to be incorporated only if $750,000 or more was subscribed by a definite date, at which time slightly over $800,000 had been subscribed, not the full $1,000,000.

Furthermore, bad prices for several years and even the inability of many growers to dispose of their crop left all growers hard up, but to have it a growers' organization and to make it easy for growers to join, it has been decided to let raisin growers get stock simply by agreeing to pay for the stock after the raisins were sold, which reduced the real working capital to only $300,000, plus the notes of persons who had no ready money and would not have until the raisins were sold.

All tales of men who went farming on a shoestring and stretched that shoestring until it was the thickness of a thread were surpassed by the raisin corporation, that had to develop all working machinery and carry a raisin crop worth over $4,000,000 on a theoretical capital of $800,000 and a working capital of $300,000, against vigorous opposition of those in charge of the raisin trade and little financial support from the banking fraternity, in a time when business and prices throughout the country were extremely poor. The association was asked to carry this crop under those handicaps and to get higher prices than otherwise would rule. It was a big job. If it could do that, as it did, it ought to be able to do anything within reason in the raisin line.

The company is unique in method of organization for growers' companies, though some essential features were borrowed from various commercial organizations elsewhere. The first great point is a voting trust that makes stability of management and prevents the stock and control from working into the hands of a few people. The stockholders gave, for seven years, all power in managing the company into the hands of a board of trustees whom they selected. These trustees number twenty-five and were selected by a vote of the stockholders from men who could be trusted for their business ability and their interests in the welfare of the raisin industry. These meet four times a year to put their O. K. on the management of the company and to decide on leading features of policy. The actual direction of affairs is in the hands of a board of directors, chosen by this board of trustees. Like any board of directors, this selects the manager and others who are to run the business. The important office is that of manager, for on that everything depends. James Madison was selected manager at the start and has been responsible for the success of the association in the extreme difficulties confronting it all along the line.

This California Associated Raisin Company was and is supposed to operate at a small profit to the stockholders, who, being mostly raisin growers, would, in one respect, be getting just so much more for their raisins for any dividends received. The fundamental point, however, was and is to secure for the raisin grower as good raisin prices as could be obtained. Dividends are a minor incident.

It was known that the market could be made to take all the raisins that could be produced at decent prices if the marketing were managed aright. To do this and get fair prices the effort was made to secure control of the whole crop.

Contracts were sent out to all growers for their raisins for a term of three years, with the option by the company to extend the contracts two years more. In other words, the company secured control of all raisins under the contract for five years. Prices under the contract varied according to the amount contracted, because the greater the amount controlled, the greater the price to the grower. At least 60 per cent of the crop had to be secured, however, before the contracts held.

By April 1, 1913, the date for contracts to become effective, there was secured under contract more than 75 per cent of the raisin acreage and the growers are thus guaranteed for their raisins the following prices until the crop of 1915 is gone, and provided the company wishes to continue the contracts, as it evidently will, for the crops of 1916 and 1917 also: Muscatels (the standard raisin), 3¼ cents a pound; Sultanas (the small, seedless variety), 3 cents; Thompson Seedless (a larger and very popular seedless variety), 3½ cents; Malages (a table grape, occasionaly dried, but of small account), 2½ cents.

These prices are the minimum and the contract is so fixed that the raisin grower, for every crop named in the contract, will get as high prices as the market will permit. The raisin company has tried to boost the price all along, and when the crop is all sold it is to give the growers everything over contract price except one-fourth of a cent a pound, or $5 per ton for cost of management and operation. For example: If at the end of the season it is found that Muscats have brought 3¾ cents a pound, ¼ cent is kept by the raisin company and 3½ cents, not 3¼ cents, is to be returned to the grower. More correctly, the grower having already been paid 3¼ cents, according to the contract, he is given the extra ¼ cent. Or say that the popular Thompson Seedless have brought 4½ cents, ¼ cent is retained by the company and ¾ cents over contract price paid to the grower.

From the time the raisins were ready for the market until the rush of the buying season was over, there was a steady increase in prices, so the raisin growers will get more than contract price for their raisins, though how much more cannot be said. The raisin company also bought raisins outright in competition with the independent packers independently from contracts. It handled 60,000 tons of raisins of the 1913 crop, out of 70,000 produced, and also bought 23,000 tons of hold-over raisins from the 1912 and preceding crops. Contracts also have continued to come in until 120,000 acres of raisin vineyard are under contract, out of 135,000 acres in the State.

If there had been no raisin company and prices had been left to themselves, raisins almost certainly would have dropped to about 2 and 2¼ cents a pound. The size of the crop, the hold over, the poor financial condition in the country and the inability of growers to hold out for more money all insured this. The difference between 2¼ cents and 3¼ cents a pound is $20 per ton, which amounts to $1,200,000 for the 60,000 tons handled. This is four times the amount of actual working capital and half as much again as the subscribed capital at time of starting. The management of the company with such results was something of a feat, to say the least.

The capitalization has since been increased, so that there is more than $1,500,000 capital subscribed, a little over $300,000 being unpaid as yet, giving the company more than four times the paid in stock of a year ago, an immense acreage under working contracts, business machinery in full operation and the prestige of a successful year's work. If it could succeed last year with all disadvantages, it should have much less difficulty this year with good working machinery and far more capital, though the crop of this year will be much larger than that of 1913.

The company likewise, by increasing raisin prices, made the 10,000 tons it did not handle sell for at least $20 more per ton than they would have brought and added that much wealth to the community. It also bought up the 23,000 tons of old raisins at 2¾ cents a pound, or $15 more per ton than would have been secured, as 2 cents was the price when buying started.

The raisins have been sold through the leading packers, who have kept their own trade, prices all the way through being governed by the company. It first leased the packing houses of the packing companies that agreed to do business with it. It then turned these houses over to these companies for raisin packing, paying them a definite price (cost price) for seeding, stemming and packing the raisins. These companies then sold the raisins through usual channels on a 4 per cent brokerage basis, with 2 per cent off for cash. In practice these companies simply bought the raisins at named price from the company, less the 4 and 2 per cent named, and sold them again to the trade. The Associated guaranteed the price against decline for a certain period, making it safe for the trade to purchase raisins. This always encourages trade, and the way that the crop went into consumption was a result largely of the stability of price.

The California Associated Raisin Company can also pack and sell raisins direct, although it has not done so yet. It is also starting an advertising campaign to increase the use of raisins.

At the start of the last season there was a coming crop of 70,000 tons to handle, much more than 23,000 tons of hold-over raisins from previous years, and large stocks of unsold raisins in the hands of Eastern dealers, the amount being unknown. The crop has been moved, the trade is in fine condition and the hold-over on August 1 was reduced to 22,000 tons, with two months left to reduce that before the new crop can reach the consumer. This hold-over will be reduced materially and be far less than any hold-over for many years.

This is too short a space to do justice to the work of this growers' organization, which pulled one of California's greatest industries out of a desperate condition, but it touches the leading features. The important thing is that on a shoestring it carried a whole crop, plus a third of a crop of hold-over, through a very bad season on the slimmest kind of credit, and came through with a big paid-up capital after getting more than enough for the raisin growers for the raisins to cover what they otherwise would have received, plus the total capital of the company. And the whole tendency in marketing is to get everything for raisins that can be obtained, without pushing the price so high as to curtail consumption. In fact, prices will be fair to everybody and it will increase the use of raisins.

There are many ways for growers to get together to market their products and this is only one way, and an interesting way it is. The essential point of all is that, in order for good results to come, the man that produces the goods has to be the one to look after the markets.

A new "Division of Pomology" dealing with deciduous fruits and nuts has recently been established at the University of California. It is in charge of Dr. A. V. Stubenrauch, a number of years ago connected with the university and later in charge of important investigations for the United States Department of Agriculture regarding the growing of deciduous fruits and the problems connected with storing, shipping and marketing fruits and nuts.

Fumigating for the Soft Gray Scale

For a long time it has been considered almost a matter of course that where oranges or lemons were grown in California fumigation for scale had to be practiced. As a method of scale control under most conditions, nothing is as satisfactory as fumigation, though a good deal of spraying is done successfully under some conditions.

In central and northern California citrus districts up to recently practically no scale had appeared to be of much account and no fumigation had been done. Very recently, however, the soft gray scale, Coccus citricola, has developed quite rapidly and fumigation is being done against it. How wide a distribution it will have, how bad it will become if unchecked, or how effective fumigation will be against it all can be determined only in time. This scale occurs both north and south and was serious south of the Tehachapi before it caused trouble in Tulare and neighboring counties.

The soft gray scale closely resembles the soft brown scale, which latter is so checked by parasites that it has little, if any, economic importance, and for some time it was mistaken for the soft brown scale. However, it seems much more free than the brown scale from parasites, which otherwise might check it, and it is likely to be far more serious. It is not known where it came from and it is possibly a native insect, being found both north of the Tehachapi and south and in many places, though only developing strongly in spots, and that in the last two or three years. Whether it will die out so as to be as unimportant as it has been, or increase in injuriousness cannot be stated.

Last year some fumigation was done against it in Tulare county. However, little investigation of the proper dosage or proper methods was made and results were varying and rather unsatisfactory. This year the work is being done systematically and with careful investigation and with very good results. The county is running five outfits and supervising one commercial outfit. Spraying is also being practiced.

A disturbing feature of the control of this scale is the fact that it is very irregular as to hatching season. In northern districts the eggs begin to hatch about April and the last of the scales that live over the winter have their eggs hatch very much later. Fumigation will not kill these old scales, and it is necessary to fumigate before the first hatched scales get too old and protected and after the later hatching scales are open to injury from the fumes of the hydrocyanic acid gas.

This year effective fumigation could begin at July 20. How long it can be continued cannot be said at present. Fumigation at this time appears to be extremely effective, and extremely small proportion of scale surviving the treatment. How long the few, if any, scale left will take before becoming injurious cannot be told now. Occasionally an untreated tree will be so badly infested with scale that it will be almost covered with honey dew, and other times the scale can be found, but not abundant enough to do apparent harm.

The best dose has by investigation been found to be three-quarter schedule on the potassium cyanide basis, sodium cyanide being used at present. The tents are left on 45 to 50 minutes, rows being started 50 to 55 minutes apart, so in case of difference in time of finishing up a row of 5 minutes, each tent will stay on at least the proper period.

Northern citrus trees, it has long been known, are different in some respects from those of the south, being grown in a hotter, drier climate and being usually more resistant to cold. The difference in climate and trees has developed a difference in fumigation methods, apparently giving greater resistance to fumigation injury. It has been believed that fumigation (always done at night) would be harmful if done at a temperature of more than 70 degrees, the more humidity the more danger of injury. It has been found that the trees in Tulare county are totally unaffected at a much higher temperature, and fumigation starts if a temperature of 80 degrees or less is reached. One night the temperature went to 86 and there was no damage from the gas at all. This means that fumigation can progress from July 20 as late as it is effective without harm to the trees. If it could be done only below 70 little could be accomplished.

Experimental fumigation was done much earlier than July 20. It was found that the trees were unaffected, but that a few oranges were spoiled early in the season. Fruit injury varied very little with the size of the dose, the maturity of the orange being the determining factor. From July 20 on the fumigation can be done without injury to fruit and with extremely effective results as regards the scale.

As stated before, how much control this scale will need, apparently a native and not before considered serious, cannot be said, but it can be controlled nicely by fumigation, and fumigation is the only control to be recommended. The black, brown and purple scales, for which fumigation is practiced in the south, are not known, or if known in the northern citrus regions, are as yet of no commercial importance.

The fumigation is done by a crew of five men, who handle from 32 to 37 tents. They go from one row to another across an orchard and if the trees are not overly large can set a full row of tents in from 50 minutes to one hour. Thus if they have rows of 32 to 37 trees, they can set each tent ten times in a night, taking each tent off of one tree at the beginning of a round and placing it over the tree ahead. If, however, the rows are shorter than named, the crew has to wait for the 50 minutes or so anyway in order to let each tree have its full period of dosage. Thus they take as long to do 20-tree rows as a 35-tree row, and instead of getting 350 trees fumigated a night, they can fumigate only 200. For this reason fumigation is cheapest when the rows are of a length to keep the men working. If working on trees of average size to good advantage the cost will be about 30 to 35 cents a tree. If the rows are shorter the cost will be more proportionately, although there will be a saving in cyanide and acid.

The fumigation is done by placing potassium or sodium cyanide, one of the deadliest poisons known, in a crock containing sulphuric acid and water. The crock is placed under the tree close to the trunk and the cyanide dropped in, the canvas being dropped immediately to prevent the escape of the fumes of hydrocyanic acid gas, or prussic acid. The atmosphere in the grove frequently absorbs enough of this gas to slow up the men and make it necessary to handle fewer than the usual number of tents, but there is practically no danger and fatalities are almost, if not entirely, unknown.

To do a good job of fumigation three great rules have to be observed: Have good canvas, kept in excellent repair; measure the tents accurately and apply proper doses; see that the tents are kept in close around the bottom of the tree.

There are five men in a gang; two to put the tents over the trees, one to measure around the tent to determine the size of the dose, he being the foreman, and two to measure out the cyanide and acid and put it in the tent.

The canvas is pulled over the trees very quickly by means of two long poles with cords over them, one being used on each side of the tree. The ends of the poles are stuck under the two corners of the canvas and a pull on the rope elevates the edge of the tent over the top of the tree and pulls it along till the tree is covered. Lines drawn across the tent show when the center of the canvas is directly over the top of the tree. Figures on these lines show the foreman who measures the tent how far it is over the top.

The foreman walks around the tent with a tape, kicking in the canvas so that it lies straight down to the ground from the branches, and measures the distance around the tree. Then from the marks on the side of the tent he tells the length over the tree. The distance over and the length around determine the amount of space that has to be filled with gas. A chart which hangs around this tells him how many ounces of cyanide are to be used for a tree of any height and circumference, 8 or 10 or 13 ounces, or some other amount according to the size of the tree. He calls out this number and the cyanide men mark it down, weighing out the right amount of cyanide. They have two glass cylinders for water and acid, marked for the doses. If it is 10 ounces that are required, one man measures out sulphuric acid to come up to the 10 mark and puts it in the crock; also in the other glass he places water up to the 10 mark and adds to the acid, placing it under the tree and holding up the tent so that the other man can get in with the cyanide. The acid man does not touch cyanide, nor the cyanide man either acid or tent. When the cyanide touches the water the mixture boils and the fumes rush out with a hiss, the acid man drops the canvas and both men take up their little table containing materials and go on to the next tree, leaving the poisonous gas to fill the tree and kill every insect on twig and leaf that is susceptible to injury. All this work is done at night, as daylight fumigation would kill the tree, as would fumigation at a high temperature if there were much moisture in the atmosphere, but it is this fumigation that has given California citrus growers such success in their fight against scale and guaranteed the safety of the industry.

Restoring the Grain Yield in California

By Prof. B. A. Madson, University Farm, Davis

During the past few years grain production in California has been on a rapid decline, due largely to a decrease in the productive power of the grain lands. Especially marked has been the falling off in the production of wheat. In the vernacular of the average farmer, "the soil is worn out for wheat." In a sense this is true, though not in the ordinary conception of the phrase. In the majority of cases the soils of California are deep and fertile, still capable of producing large crops for a long period of years.

The real cause for the decrease in yield, as experience has shown, is a lack of moisture. At best the annual precipitation in the valleys of this State is low, frequently but ten to fifteen inches or even less. If, now, for any reason the plants are unable to obtain but a small portion of this already limited water supply, the yield is certain to be low.

Inasmuch as the crop secures its water supply from the soil, the soil that will store the larger proportion of the rainfall for the use of the crop will usually produce the highest yield. The ability of the soil to absorb and retain the moisture is dependent largely upon its physical condition. When extensive grain farming began in this State some thirty or forty years ago, fairly satisfactory results were obtained upon these excellent virgin soils, but the methods of culture that have prevailed during the ensuing years have resulted in destroying the physical condition of the soil, rendering the absorption of moisture impossible, so that a large portion of the precipitation was lost.

At the outset the land was annually cropped to grain, and in order to cover as large an area as possible was plowed to a depth of three or four inches year after year. This continuous cropping and shallow cultivation resulted in depleting the surface soil of its humus content, and in the formation near the surface of an impervious layer or plow-sole, rendering the penetration of water impossible. In this way land which twenty or thirty years ago produced good crops of grain has within recent years greatly decreased in productive power, until unprofitable yields became the rule rather than the exception.

With water a the limiting factor in crop production, it can readily be seen that in order to secure the best results every effort must be made to store the water in the soil so that it may be utilized by the plants as needed.

In the first place, therefore, it is necessary to keep the soil receptive and in good physical condition, to facilitate as rapid absorption of the rainfall as possible. The soil must contain the moisture before it can be conserved. In order to accomplish this the land should be plowed deep in the fall before the rainy season is far advanced, thus making the surface of the soil loose and porous, enabling the precipitation to soak in rapidly. Furthermore, this deep cultivation provides a favorable medium for deep root penetration, rendering the plant more capable of withstanding prolonged periods of drouth, as the roots are enabled to draw moisture from the lower soil depths. Deep plowing also aids in aerating the soil, which is essential to keeping it in good tilth. For fall plowing seven to eight inches is none too deep on most of the soils in this State. Even this comparatively deep loose layer will be sufficiently packed by the following rain to form a good seed-bed and to establish capillary connection with the soil beneath.

The amount of moisture which may be stored in the soil within reach of the plants will depend largely upon its texture and the amount of humus which it contains. Fine clay soil well supplied with humus will often hold over thirty per cent of moisture, while coarse, sandy soil will frequently be unable to hold ten per cent. It is estimated, however, that the average loamy soil as found in the valleys of this State is capable of retaining against gravity about two and one-half inches of water per acre foot. Since the roots of our cereal crop penetrate the soil to a depth of eight to ten feet it will readily be seen that it is entirely possible to store nearly all of an average season rainfall within their reach.

Having secured the absorption of the rainfall by the soil, the next step is to conserve or retain it until needed by the plant. This is best accomplished by surface cultivation; maintaining a mulch to retard evaporation. It has been adequately demonstrated that the maintenance of a four or five inch mulch will effectually reduce the seasonal evaporation to a few per cent of the annual precipitation. In order to be most effective, this surface cultivation in some form should be practiced at all times when a crop is not growing upon the land.

Plowing immediately after harvest is desirable wherever soil conditions will permit. Many of our heavy soils, however, are extremely difficult to plow at this time, in which case it

(Continued on Page 33)

Early Bearing of Valencia Orange

There is a belief among fruit men that a young tree should not be permitted to bear more than a few fruits at the most, a belief that is probably well enough founded in certain respects, but not good to follow exclusively. The illustration shows a Valencia tree and the crop that it produced during the fourth year. The gentleman in the picture is over six feet tall, so the tree can be seen to be a vigorous grower and the crop speaks for itself.

A Valencia Orange Tree and the Crop It Bore Four Years After Planting.

This is in a 20-acre grove belonging to H. C. Carr of Porterville, five acres being in Valencias and 15 in navels. It is located several miles south of Porterville against the foothills, slightly elevated above the floor of the valley, so has an excellent location from the temperature standpoint. The soil is a decomposed granite and the trees have been given perfect attention in irrigation, cultivation, fertilization, pruning and otherwise. The tree in the illustration was selected a year ago as an ideal Valencia tree of its age for shape and size and is shown in the prospectus of the University of California this year, opened up to display trunk and branches, as an ideal for location of branches. They are all placed far apart, will never cross or interfere, nor send out suckers. It was only half the size then that it was when the accompanying picture was taken, right after fruit picking this year.

At this time the trunk was 17½ inches in circumference, 6 inches up; 8½ feet hight and 43 feet around the branches. The crop was composed of 708 oranges, all of which packed fancy. They filled the three lug boxes shown and 87 were left for the fourth box. The tree was in perfect condition after the crop was removed and a fair crop is set now, so the yield caused no injury whatever.

From the whole 20 acres there was secured 2,040 boxes of oranges the season just passed and many were given away besides. The trees are planted 24 feet apart each way, three are out for the pumping plant and there are four pomelo trees, so the average per tree is larger than would be the case on 22 or 20 feet solid planting.

From the 1,016 navel trees last season were secured 1,432 boxes of fruit. On a well cared for orchard it certainly is possible to let the trees bear as much as they will.

CANADIAN IRRIGATION.

Although Western United States is the land of advanced irrigation, a project of the Canadian Pacific Railroad near Calgary, Alberta, is one of the greatest in area in the world. In this about 1,000,000 acres of land are supplied with water in a block 40 miles wide extending 150 miles east of Calgary. The water is taken from the Bow river and comes from melting snows in the Canadian Rockies. Although this Canadian country has been considered a dry farmed country, enough rainfall ordinarily occurring to insure crops, irrigation, as usual, has proved extremely profitable. Experiments at the Dominion Government Farm at Lethbridge showed that irrigation increased the yield of potatoes 260 per cent; turnips, 200 per cent; sugar beets, 184 per cent; field peas, 73 per cent; two rowed barley, 69 per cent; six rowed barley, 45 per cent; and spring wheat, 33 per cent.

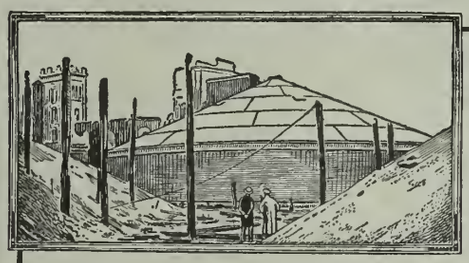
COVER CROPS AND WINTER KILLING.

There has been a good deal of winter injury and winter kill of fruit trees in the Northwest this past winter, and the Washington Experiment Station has given out the following statement regarding this killing and the effect of cover crops upon the trees. In some cases the trunks of the trees were the parts that suffered and in others the twigs and small branches were the only parts of the plants injured. The winter was not extremely cold, but there was some warm weather followed by colder and the harm seemed to be the result, in many cases, of fluctuating temperature.

The trees that were growing in sod or in permanent cover crops or even weeds and grass did not suffer as much as the best, clean-cultivated and irrigated orchards. There are orchards in several districts that show exceptions to this general statement, but they are rare and usually show some other condition out of the ordinary in their surrounding conditions, or in culture and treatment. In sections where fall rains start before hard killing frosts have stopped the growth, winter killing has been common in some orchards before a system of cover cropping was established. Annual cover crops that make a good growth in the fall are usually helpful in preventing winter injury in regions where there is plenty of rain or snow fall in the winter.

For the best results the annual cover crops should be planted not later than the middle of August. The permanent cover crops of clover or alfalfa should be planted earlier in most localities. For the annual cover crop, rye, winter wheat, or field peas are best. Winter vetch is a splendid crop to use if the seed can be secured. In many ways it is the best of all the annual crops.

At the Sebastopol Apple Show held early in August the fruit was notable for the apparent care of the orchard by growers. Only one wormy apple was found in scores of boxes of fruit examined, only three or four pernicious or San Jose scale and very little scab. The freedom from these serious pests was remarkable and showed fine orchard methods.



10,000 Persons Would Not Now Be Homeless If All Salem Buildings Had Been Roofed With

J-M ASBESTOS ROOFING
"The Roll of Honor"

Profit by the lesson of the great Salem, Mass., fire. Don't put wooden shingles on your buildings!

If you do, you will have to trust to luck that fire will not come your way.

And you will find them extremely expensive, too, because they have to be constantly repaired.

If you value safety and *real* economy, use J-M Asbestos Roofing.

It resists fire—never requires painting or repairing—and is absolutely and permanently water-tight.

Get roofing service out of a single investment that pays dividends in fire protection and freedom from bother and expense for years to come!

GET J-M ASBESTOS ROOFING!

J-M TRANSITE ASBESTOS SHINGLES also provide *absolute* fire protection and add to artistic appearance by their attractive colors and rough edges.

J-M Regal Roofing is recognized as the most serviceable brand of woolfelt roofing.

The Evening World.

SHINGLES TO BLAME

MASSACHUSETTS is still bending a thoughtful brow over the ruins of Salem.

Everybody agrees that the one thing which contributed most to the spread of the fire was—shingles. House after house burst into flame the instant the rain of sparks touched the tinder-like shingle roofs.

• • •

—a dry, weathered shingle makes about the finest kindling known. In a closely populated town a brisk wind carries flames over shingle roofs as fire sweeps over sunburnt prairie grass.

The Bay State is using the Salem fire to start a strong argument against shingles. It will do the rest of the country no harm to listen.

Write Nearest Branch To-Day for Descriptive Booklet 97

H. W. JOHNS-MANVILLE COMPANY

Manufacturers of Asbestos Stucco; Pipe Coverings; Cold Storage Insulation; Water-proofing; Sanitary Specialties; Acoustical Correction; Cork Tiling, etc.

Albany, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Indianapolis, Kansas City, Los Angeles, Louisville, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Syracuse

Johns-Manville Service Covers the Continent

2546

THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED
Toronto Montreal Winnipeg Vancouver

TRADE MARK REGISTERED 1873

VALVOLINE OIL

For Gas Engine Cylinders, Tractors and Caterpillars.

Valvoline Oil Co.

San Francisco Los Angeles Portland Seattle

A. A. Jenkins on Citrus Pruning

A few people make a remarkable success of citrus culture, so much more of a success than average that it indicates that possibly not one grower in five really lives up at all near to the possibilities of his grove. The proportion may not be correct, but it don't matter. A large proportion of citrus growers do not get the results that they should.

For best results, suitable location, suitable soil, proper irrigation, cultivation and fertilization and control of insect pests are needed, also proper pruning. The latter is more than any others a problem of tree handling and is the subject of this rather rambling discussion, which is based on a trip through many citrus groves of Tulare county, good, bad and indifferent, with A. A. Jenkins of Porterville.

Mr. Jenkins is considered the leading authority on orange pruning and closely related matters in Tulare county, and his ideas have obtained rather wide approval. Quite naturally, they have also developed vigorous opposition, as any pronounced ideas contrary to accepted belief and practice are sure to develop. In such a case the sensible thing is to hear reasons and to decide the probability and extent of their correctness, and better still to investigate results. Anybody is welcome to any decision regarding the ideas given here that seems fit.

A fundamental principle in pruning, as expressed by Mr. Jenkins and generally accepted by most authorities, is about as follows: Pruning develops tree vigor and tree vigor is a necessity. That is why we prune peaches, apricots and other trees, including oranges, though usually oranges are practically unpruned. In this case the theory is applied to orange as well as deciduous trees

Old wood gradually loses its vigor and often dies. Every orange grower believes that he has to cut out dead wood. Mr. Jenkins goes two steps farther and says that wood of declining vigor should be cut out before it dies; in fact, as soon as it has outlived its usefulness, that same cutting out being of definite value in making new and vigorous wood growth and lightening up the interior of the tree. In brief, keep unthrifty wood cut out, thus letting in light and air and forcing new and vigorous growth out. You have there the fundamentals, the rest is largely detail or variation in practice on account of special cases.

This cutting out is normally only of the small stuff; it is not cutting out big branches, except in some cases.

The commonly expressed idea of orange pruning for the first few years is to let the young tree shape itself almost entirely. Mr. Jenkins believes in training the young orange tree in the way it should go, just as a peach grower directs the growth of a young peach. Perhaps five leaders are left, perhaps three, or in rare cases two, depending upon the way the tree starts; yet, however many leaders are kept, the idea is always to see that they come out from the trunk right and will not interfere with one another when the tree reaches full size. Sometimes only one cut, or none at all is needed to give the young tree the right leaders. When the leaders are right, the tree will largely shape itself.

One thing that is totally out of the question is to let any sucker, or straight growing water sprout, grow up into a branch and demoralize the tree. After the tree has sized up well and gotten into bearing such shoots are very unlikely to start if normal pruning is attended to, though if a sucker branch has started, suckers may later come from it again till sucker comes from sucker and a "hobo" tree of the poorest sort results, often called an Australian navel. This proposition has been discussed in these columns not long since.

The difference in the standard pruning of oranges and the Jenkins pruning is largely in the looks of the interior of the tree. Standard pruning, or the removal of dead wood and suckers only, leaves a tree so dense inside that light and air cannot penetrate. The tree is so thick that no wood can be very vigorous, no more than it could be in the center of a peach tree that had not been pruned for several years. A person can hardly penetrate to the center of the tree and all that there is of good green leaves is a dense wall of the same on the outside. It is there that the only fruit is also.

In the theory of the thing no strong wood can grow where a tree is too dense, nor much fruit either. In the investigation there were found some finely shaped, large trees with leaves of fine color where the trees were dense all the way through. These had fruit only on the outside and the total amount of fruit was not great. This is even when color of leaf and general conditions showed right soil tillage and good tree vigor. Trees about half pruned inside and as well cared for otherwise almost invariably averaged considerably larger crops. Trees thinned out so that the leaders were smooth except where new, good growth had started had fruit inside and likewise more fruit outside than unpruned trees. Theoretically this is correct, as fruit and healthy, vigorous growth can come only where pruning is enough to encourage it and where light and air reach.

Take a good tree, unpruned and dense inside, and cut out all the small stuff along the leaders and it will result in thinning the whole outside wall of the tree and let light and air in to help the new good wood growth that starts through the stimulation given by cutting. The light comes in all over, not in a big bunch, as if a leader, or big branch had been bodily removed.

Wood is always cut off, never pulled, except when so small and soft that it can be rubbed off with one's glove.

On the outside of the tree also, which is always branching if the new growth necessary for success is kept growing, new shoots will take the place of three or four year old wood. The latter finally ceases to produce fruit, is no good and only a detriment, and the right idea is to cut the old twigs off back to a place where a newer, year old or two year old twig starts out from it. Thus all growth left is vigorous, bearing growth, stimulated by the removal of old wood from which it starts. The idea never should be dropped that cutting encourages wood growth, wood that has outlived its usefulness should be removed, and a tree cannot bear well unless tree vigor is behind it.

Thus an orange tree is pruned inside and some outside. It makes lots more cutting than is usually done, more time, more expense, but what does that amount to if it is a success? It is the results that count and it is worth investigation to see whether results do come from this practice.

There is lots to be said in addition to the above, about pruning to cure chlorosis, treating cross limbs, curing gumosis, and other details, and that may come later. What has been given provides the leading principles of orange pruning in general, according to the Jenkins methods. The methods have gained many disciples in Tulare county and they have met vigorous opposition. If the principles look good, the practice based on them in theory should be good and if the principles are wrong the practice in theory is wrong. The final test is results.

TO KILL GRASSHOPPERS.

In our June issue a bran mash used in Kansas, containing some lemon flavoring, was told of for its effectiveness in killing grasshoppers. That it is a wonderful success is made clear by the following statement from the Washington Agricultural College:

"In this campaign against the grasshopper the County Commissioners of western Kansas distributed at county expense nearly 700 tons of poisoned bran, allotting 200 pounds to each farmer. In two days after the treatment made on "Grasshopper Day" the ground was covered with dead grasshoppers, and at the end of what was considered to be the worst grasshopper year in Kansas history there were fewer living grasshopers than there had been for many years. Such wholesale destruction of insects give not only immediate benefit, but its effects will be apparent for several years to come."

This Kansas formula prescribes the following; Paris green, 1 pound; bran, 20 pounds. Mix thoroughly in a washtub while dry, then stir in the following formula, well mixed: Two or three lemons or oranges, chopped fine; three pints of cheap syrup; three and one-half gallons of water. The lemons greatly attract the grasshoppers. From 5 to 10 pounds of the mixture is put out per acre.

GOOD SQUIRREL POISON.

The following preparation for poisoning squirrels is being used with success:

Whole barley (recleaned), 18 pounds, strychnine sulphate, 1 ounce; soda bicarbonate, 1 ounce; saccharine, 1 dram; thin starch paste, 1 pint; corn syrup (Karo or equal), 2 ounces.

Dissolve the strychnine in hot water; thicken with starch to about the consistency of thin soup. Dissolve the soda in one-half pint of hot water and add little at a time to the poisoned starch until effervescence ceases, then add the syrup and saccharine, mix well and apply to the grain, stirring constantly until the poison is evenly distributed throughout and the grain is thoroughly dry.

It is stated that the bitter taste of the strychnine is overcome for some time in this mixture and the squirrels consume more of the poisoned grain than they would of grain as usually prepared with strychnine; also that a much greater proportion of dead squirrels is secured than with the poisoned barley commonly used.

Graphite is an excellent lubricant for open bearings, chains and the like.

ORCHARD AND FARM
will PRODUCE More CROPS
When You Own
SAMSON SIEVE-GRIP
TRACTOR

Samson Seive-Grip Tractor
is the result of 18 years'
Practical Experience
building engines for farm use.
The TRACTOR Is
DUST and DIRT PROOF
Narrow--Low--Strong
Engined 30 Horsepower
TWO SPEEDS. 2 or 4 Miles
Cannot Pack the Soil
It will pay you to
Investigate To-Day.
Write for Catalogue O. A.
SAMSON IRON WORKS
1106 S. AURORA ST.,
STOCKTON, CAL.

IRIS Illustrated catalogue containing valuable information and beautiful color plate. 15 cents. List with prices on over 200 varieties, free upon request.
The Dean Iris Garden, Moneta, Cal.

PUMPS

Whatever kind of a pump you need—we have it. Handling all styles of pumps we are not obliged to urge any one type on you, but are in a position to help you select the pump best adapted to your particular requirements. We manufacture and sell

Horizontal Centrifugal Pumps
Vertical Centrifugal Pumps
Deep Well Pumps, Power Heads
Windmill Pumps, House Pumps

Illustrated are three of the many different styles. Don't decide on a pump till you put your needs up to our Pump Specialists. Their advice and suggestions will cost you nothing.
WRITE TO US and state your requirements—by guiding you to a right selection we can probably save you both money and trouble.
FREE CATALOG 28-B describes Bean Horizontal and Vertical Centrifugal Pumps.
FREE CATALOG 28-D describes all other pumps; also Bean Distillate Engines.
A postal will bring either or both by return mail.

BEAN SPRAY PUMP CO.
225 West Julian St. San Jose, Cal.

A State Department of Agriculture

There is to be presented to the next California Legislature a plan for a State Department of Agriculture, modeled after the United States Department of Agriculture. In this it is proposed to have all bureaus, commissions and boards relating to agriculture brought under one head. This is a matter of extreme importance for California agriculture and we have had S. A. W. Carver, secretary of the California State Dairy Association, provide a statement of the plan together with his views of the matter, given herewith:

"California is about to take her place in the front rank among the great agricultural States of the Union. In our State government we have been suffering great loss in efficiency, great waste of energy and money and much scattering, duplication and conflict of effort in our methods of supervising agricultural affairs and administering those branches of the government dealing with agricultural, horticultural, livestock and dairy matters. All these branches are now being run independently by various boards, commissions, bureaus, and offices, without any relation to each other or to the department as a whole, and at great loss in economy and efficiency.

"Morover, many of our counties and some of our cities are trying to do in part a similar class of work, thus resulting in further conflict, duplication and waste of money and labor.

"A movement is already well under way in this State for the creation of a Department of Agriculture, to be organized and operated somewhat after the plans of the United States Department of Agriculture. with the idea of merging under it all State boards, bureaus and commissions dealing with agricultural affairs.

"Most of the horticultural, agricultural, livestock and dairy organizations of the State have already indorsed the movement and have appointed committees to work together in the preparation of the necessary bills and in conference with the agricultural college of the University of California. So far no one has been found who could give a good reason for not favoring the plan.

"Our numerous State boards, commissions, bureaus and the like, of course have done good work, but the results are not in proportion to what they cost us or to what they might have been had the same work been handled under a system similar to that of the United States Government department. They lack a central authority and responsibility and involve an overlapping and duplication of functions which impair their efficiency. A large portion of their funds are applied to office rents, clerical services and other overhead expenses that should be applied on the firing line, where the results are to be had. Under the circumstances it is not difficult to see that job holding, rather than results, becomes the motive in these institutions, and that in consequence their weak influence is not to be wondered at. Any successful business man with an eye for results would long ago have merged these scattering boards, bureaus and commissions into one strong, well-organized and centralized institution.

"Most of the leading agricultural States either have already adopted this system, or are now preparing such a system for adoption. New York adopted it several years ago. Washington adopted it last year. Minnesota has such a system all prepared ready for adoption upon the convening of her next Legislature. A recent letter from the Secretary of the State Board of Agriculture of Wisconsin says that such a movement is now under way in that State.

"California with her vast and wonderful agricultural resources, still largely undeveloped, must keep in step with this forward movement or lose her rank as a great and progressive agricultural State.

"The passage by Congress of the recent agricultural extension bill, known as the Lever bill, making large appropriations directly to each of the States for agricultural extension work, on condition that the State provide an equivalent amount, would seem to call for a better agricultural organization in this State, in order to be able properly to handle the agricultural extension work contemplated in said appropriation and act of Congress.

"One of the plans under consideration by the committees now at work contemplates a very comprehensive and yet a well centeralized organization for this new Department of Agriculture. It is as follows:

"Bureau of Animal Industry—Division of livestock, division of dairying.

"Bureau of Plant Industry—Division of horticulture, division of agriculture, division of forestry.

"Bureau on Biology—Division of entomology, division of bacteriology.

"Bureau of Chemistry—Division of foods, drugs and oils; division of feeds, fertilizers and soils.

"Bureau of Economics—Division of conservation, irrigation and reclamation; division of fairs and exhibits; division of markets and statistics.

"The head of the department would be known as Secretary of Agriculture. The head of each of the five bureaus would be known as director of his particular bureau. And the head of each of the bureau division would be known as chief of his division. The five directors and the Governor of the State, as an ex-officio member, would constitute an advisory board to the secretary.

"The strength, efficiency and economy of such a system can be seen at a glance.

"The movement to secure the necessary legislation creating this new department is strictly non-partisan and every effort will be made to keep it absolutely free from partisan politics.

"There is no need for those men to be alarmed who now hold positions upon existing boards and commissions likely to be affected. If they are now doing good work they ought to be retained in corresponding positions under the new department, and under this plan they can be. If they are not doing good work they ought not to be retained.

"Placing the welfare of the State above personal advantage, the heads of several of the existing State commissions have already announced that they will not oppose the creation of the new Department of Agriculture, and it is believed that most of the others will do the same.

"This measure, if adopted, will surely mark a new era in the development of California's agricultural, horticultural, livestock and dairy industries. It will do more than all other things combined to simplify and systematize legislation upon these subjects, and will tend to give a more practical and helpful character to such legislation and will eliminate much that is impractical and hurtful."

Note—We are inclined to believe that the supposed disadvantages of present conditions have been stated too vigorously above, and that possibly the machinery suggested is a little too elaborate, making it doubtful if there would be more economy and efficiency than at present, but if and efficiency than at present, but the idea has a great amount in its favor. Our observation is that the various State bureaus and commissions relating to agriculture are nearly all being very capably and economically administered, which is, however, no argument against the proposed plan.—Editor.

ROSE BEADS.

Gather the rose petals, all colors, although the dark ones are best. Grind them through a food chopper about twenty times, but it is not necessary to do this in one day. Grind them till you are tired and then set them aside in an iron kettle till next day. When grinding is complete, fry the pulpy mass in vaseline a few moments. By this time it will be quite black. Put vaseline in to keep the mass soft enough to make into balls. The vaseline seems to make them blacker and shinier, so put in as much as you need.

Roll them into balls as large again as you wish them, for they shrink, and then string them on hat-pins or wire till hard.

GROWTH OF THE HAT.

Do you ever stop to think that the higher socially the wearer, the higher the hat?

No savage ever wore a silk hat or one with gaudy flowers. What he tried first was a skull cap. Because the skull cap failed to shade his eyes a brim was added. The next addition was hatband. Then came a single flower. Gradually from this was developed the flower bed with a border of grass and a fence around it.

The evolution then proceeded rapidly, fruit, wild and domestic; vegetables, oriental flora, even fauna were added and all these finally metamorphosed into the vegetable garden of last year.

The fifth annual California Apple Show is to be held in San Francisco October 1 to 11, instead of in Watsonville. There will be a floor space of 100,000 square feet.

Insurance costs, but no insurance costs more.

BUYING OR SELLING—

A Square Deal either way on a

"McDonald Pitless" Scale

A scale protects you only when accurate. The "McDonald Pitless" is accurate every day in the year—guaranteed for 10 years.

Protected Bearings Never Freeze.

The patented bearings, protected from snow, ice or dust are used only on the McDonald.

Requires no pit—easy to erect—steel frame—steel joists.

Used for weighing U. S. Mails.

FREE { Write today for handsome Wall Hanger in 5 colors.

California Moline Plow Co.,

Dept. 76, Stockton, Cal.

EVERYTHING
FOR THE
BUILDER

Bargains in Building Material

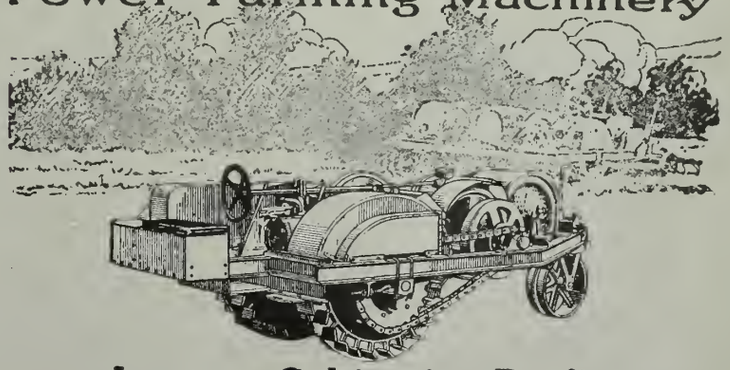
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.

Carload Lots a Specialty.

H. McKEVITT & SON

1849 Mission St.,
Near 14th St. San Francisco.

RUMELY
Power Farming Machinery



Increase Cultivation Profits

Any orchard cultivation increases quality and quantity of yields, but a ToeHold tractor reduces cultivation costs, and so adds to profits. It is built on the coast to fill coast requirements.

Rumely ToeHold Tractor

Built low, narrow and light to work under limbs and close to trees. It is especially adapted for orchard and vineyard work, but will plow, haul and harvest as well as any other tractor of its size. Weighs 8,800 to 10,000 lbs., depending on equipment. Height with limb shields only 5 ft. 3 inches.

All parts are protected from dirt and dust. An air clarifier keeps the dirt out of the carbureter. It burns gasoline.

Ask for ToeHold catalog F. B. 31. A guide to bigger profits.

We have good stationary engines as wel as good tractors The Rumely-Falk burns kerosene and the Rumely-Olds gasoline. Every Rumely machine is backed by Rumely service—49 branches and 11,000 dealers. Supplies and parts without delay.

RUMELY LINES

Kerosene Tractors	Engine Gang Plows	Gasoline Engines	Cream Separators
Gasoline Tractors	Threshing Machines	Oil Engines	Corn Machines
Steam Engines	Clover Hullers	Baling Presses	Lighting Plants

RUMELY PRODUCTS COMPANY
Chicago (Incorporated) Illinois

How to Succeed in Growing the Calimyrna Fig

As yet the fig is one of the minor fruits in California. As beside prunes, peaches and apricots, the acreage and the output is insignificant. Likewise, [illegible] trees, the far larger and most important part of commercial fig production is from roadside and border trees. The fig, to a very great extent, is simply a side issue to raisin vineyards or other kinds of ranches.

However the fig has started to jump ahead in popularity, so that much commercial planting is being done. For regularity of yield, convenience in harvesting and great net profits considering the care and attention required, it is hard to beat. You can always make money with the fig, and the time is fast approaching when it will become one of California's most important fruits—not a minor fruit by a wide margin.

Methods, markets and profits are to be practically ignored here in a little explanation of the matter of selection of variety. This season fig trees through the San Joaquin valley actually broke down frequently with the heavy yield. These were the white Adriatic, which provides the great bulk thus far of California dried figs. It is the easiest to grow and the heaviest bearer, though the fruit is a good deal cheaper than the Smyrna, which is the great dried fig of western Asia, and is shipped in large quantities to the United States, and commonly called, when grown in this State, the Calimyrna.

The Calimyrna, through its greatly superior price and quality, has been [illegible] much in California, while the white Adriatic has been largely left to look after itself. The difficulty that the majority of California fig growers have had in securing heavy yields, and the good yields from most Adriatic trees has had a tendency to make the Calimyrna less popular than the Adriatic, though the fact that it usually sells for about 1½ cents more a pound than the Adriatic is [illegible] to carry it a good ways in popularity.

The fundamental fact in producing Calimyrna figs is to have the fig wasp to carry the pollen into them from the Capri fig, as most everybody knows. Without this the figs will not stay on or make an edible fruit. The fig wasp [illegible] in some varieties of figs called Capri figs, and in June, just when the young wasps hatch and come out to mate and lay eggs, these Capri figs are taken and put into the Calimyrna trees. The wasps [illegible] enter the [illegible] Calimyrna figs in search of a place to lay their eggs, and the pollen they carry on their wings makes the Calimyrna figs develop normally and make the [illegible] and most valuable fig known in the markets of the world.

The only trouble in California has been to manage this right, so that a big enough crop of Calimyrna figs will set, though in Asia Minor the illiterate natives have no trouble at all and would not think of growing anything but the Smyrna fig as a money-maker. Now, possibly it may be that the heavy producing Adriatic, though [illegible] it is, may be the best fig to grow commercially; and as it [illegible] there is little doubt [illegible] it is superior commercially to any other variety known in California, but when the Calimyrna is on [illegible] soil, cultivated properly and made to set a full [illegible] of the figs it [illegible] its superior quality and greatly superior price make it hard to beat. As stated before, the only hindrance to its spread has been the fact that with most growers the right handling of the Capri fig has been neglected, so the yield consequently often is light.

Any simple proposition can be made [illegible] confusing by connecting a person that it is difficult, intricate and involved. It is the idea of S. A. Gebhart, field superintendent for George C. Roeding, the oldest Calimyrna fig grower in California, that all the difficulty in getting the Calimyrna set to a heavy crop of fruit comes from the fact that people think the handling of Capri figs difficult and a very scientific sort of a job, instead of the simple thing that the illiterate natives of Asia Minor find it.

The main fact is that it is necessary to put the Capri figs in Calimyrna trees about the time that the wasps are ready to come out. In Fresno this work starts from about the 4th to the 10th of June and continues for twenty days or three weeks. It is easy enough to tell when to start, as the Capri figs get ripe to sight and touch, or, if a person wants positive proof, he can see the wasps, which are little bits of things, coming out. That part is simple.

Now, the first big mistake is in setting out too few Capri figs and putting them out too seldom. The average man puts some in the Calimyrna trees perhaps three times. On the Roeding orchard Capri figs are picked and put out every day as fast as they ripen or become ready. One day they are put on one half the orchard, the next day on the other half, so every two days each tree has some new figs put on it. That is simple enough. The reason for this is that the Calimyrna figs come on irregularly. Early in the season, or early in June, a few will be ready for wasps, but the most will not be ready; so if wasps are put out then only, most of the crop will be lost. It is absolutely necessary, if the tree is to set all the figs it should set, that Capri figs be placed in the trees to send out wasps continually for about twenty days. Both theory and practice are simple.

These Capri figs are dropped into little wire boxes hung on a lower limb. From six to ten figs are used per mature tree in the 20 days, depending upon size and number of figs available. As a general thing, people have used far too few figs, as well as putting them out much too seldom. To be safe it is well to have about eight Capri trees per acre of Calimyrna trees. However, these need to be not often much closer than the Calimyrna trees, which, on the right soil, will bear up to feet apart; and, on good, rich soil, even farther.

A next essential, if a person is to secure a full crop of Calimyrna figs, is to have several varieties of Capri figs. With only one or two Capri varieties, all will be gone in too short a season without giving figs and wasps at a time when some Calimyrna figs need some pollen from the fig wasps. Therefore have some early, midseason and late Capri figs. Those used on the Roeding place are Roeding Nos. 1, 2 and 3 and [illegible]; but there are others to select from. It is a simple thing to see the need of having a variety of Capri figs.

That is about all, though, to be sure of enough Capri figs in June it is necessary to be awake in April. One crop of Capri figs is ripe at that time, and [illegible] from them. Another crop is just coming on in which wasps lay their eggs. You frequently will find some Capri trees with a heavy crop of new figs—those to be used in June—but no old figs, or only a few. You also will find other Capri trees with many ripe figs from which wasps are coming. You simply put a lot of these figs on the trees that have few or no old figs on them, so that the wasps can lay eggs in every fig on the tree. Only that way will those new figs have a set of wasps to come out in June. This is simple, too—just seeing in April at a time that a new set of wasps come out that figs and wasps go into every Capri tree, in order that eggs may be laid in all the figs. This is one great mistake of most fig growers, who become short of the Capri figs that are essential if a good crop of Calimyrnas is to be secured.

There is one other thing that is good to attend to in some years, that is to get Capri figs for early Calimyrnas when Capri figs grown at hand are not ripe enough, or the wasps are not coming out from them. If Capri figs are grown near the foothills the wasps will be ready early, and sometimes, though not often, the Calimyrna trees [illegible] will need wasps too early for the regular trees to supply, and then, for a few days, while waiting for the regular Capri figs to ripen, the foothill Capri figs can be used. This is a minor point and if a person has no Capri figs in early districts and some season he would need some, he probably could buy them.

One thing about the Capri figs that should be mentioned is that they will bear better and be easier managed if planted together in one block than if sprinkled here, there and everywhere over the orchard.

SUMMARY—The fundamental points about using the Capri figs so as to make Calimyrna figs set and be [illegible] sure of a good crop, are all simple. Put out [illegible] Capri figs, say [illegible] per tree, put out a few every day or every second day for about 20 days. Have four or five Capri varieties, so that you will have figs all the time; watch your Capri figs and wasps in April so that there will be wasps in all the Capri figs [illegible] in June. As a kind of insurance, it is often well to secure early Capri figs when a few Calimyrna figs come on before the regular supply of Capris are ready. You could not want anything easier than that.

Some things should be noted about the Calimyrna, or Smyrna, as compared with the Adriatic. The fig is much more solid and much heavier, so that [illegible] figs would weigh more than a given number of Adriatics. The Adriatics will appear to do better than the Calimyrna when only producing the same tonnage, owing to having smaller fruit and a more compact [illegible]. The Adriatic has a flat [illegible] the Calimyrna a high one, giving far more bearing surface, even though the yield does not look as heavy. For another thing the Adriatic wears more than the Calimyrna. And the biggest feature of all is the much higher price of the Calimyrna.

The Adriatic, under the best conditions for each, possibly would bear more than the Calimyrna, and the average Adriatic tree under present average methods, is evidently more profitable than the average Calimyrna, but that is due to the poor methods used on the latter. The Adriatic evidently will always be the tree for borders or for dooryards; the Calimyrna, as it bears and sells with proper handling, seems to have the biggest future as an orchard tree. Both have a fine outlook.

POTATO CONVENTION.

A Potato Convention has been called by State Commissioner of Horticulture A. J. Cook to meet in Stockton, September 5 and 6. Dr. Appel, a potato pathologist of Europe; Dr. Orton and Prof. Stuart of the U. S. Department of Agriculture, and other scientists will be present, as well as many potato growers from California and elsewhere. The object of the convention is to determine upon the best methods of control of the potato tuber moth, and upon the handling of potatoes to reduce to a minimum the danger of transporting the insect in California tubers to districts where it does not now exist. Only by this means can an extension of the quarantine against California potatoes be prevented. This moth is the worst potato pest in California.

Do you know poultry diseases? Can you detect them when they first appear? Do you know what to do to keep them out of your flock?

It is uncontrolled disease that eats up poultry profits, therefore, the man who knows how to fight it is in a good position to become a successful poultryman.

Our POULTRY BOOK tells these things in a clear concise way. It tells you facts you need to know and every poultry owner should have a copy. Send four cents in stamps to-day and we will gladly mail you one. Address your letter to our Consultation Dept.

The G. E. CONKEY CO.
102 Conkey Bldg., Cleveland, O.

CALIFORNIA BUNGALOW
Portable
BUILT RIGHT PRICE RIGHT
[illegible]
Call and inspect [illegible] or write for [illegible]
[illegible] K. C. Bungalows
KENYON PACIFIC [illegible] 5 FRANCISCO STREET SAN FRANCISCO

Cutaway
CLARK
Disk Tools for Intensive Tillage
There isn't a farmer in America but who should own at least one CUTAWAY (CLARK) disk harrow or plow
Over 100 Styles and Sizes
Ask us about the DOUBLE ACTION ENGINE HARROW, the DOUBLE ACTION—REGULAR, the DOUBLE ACTION—EXTENSION HEAD—for orchard work, the SINGLE ACTION—REGULAR, the SINGLE ACTION—EXTENSION HEAD—for orchard work, the BUSH AND BOG PLOW, the CORN AND COTTON HARROW, the RIGHT LAP PLOW, the CALIFORNIA ORCHARD PLOW, or one-horse harrows and cultivators.
It may be that you need. Ask your dealer to show you a CUTAWAY (CLARK) machine. Do not accept a substitute. Write us for catalog.
The Cutaway Harrow Company
Maker of the original CLARK disk harrows and plows
900 Main Street, Higganum, Conn.

$18.30 PER HORSEPOWER
Can you buy a horse for $18.30? But you can get a six horsepower
DETROIT FARM ENGINE
[illegible]
Detroit Engine Works
Detroit, Mich.

$18.30

PLAN
TO ATTEND THE
Dairy Show
MODESTO
OCTOBER..............15, 16, 17

The Kings River Delta Country

The Kings river delta country, lying about 20 miles southwest of Fresno and on the west side of the San Joaquin valley, is one of the little known, but most interesting parts of California. Although almost unknown, except to the few thousand people living therein, it covers approximately 150,000 acres of a kind to compare with the great delta country of the Sacramento and San Joaquin rivers, though much different from it in many ways.

California is a wonderful country for the occasional great areas of land with not only no lack of water, but water only a few feet below the surface, often covering the surface, and with a network of sloughs running through it. While this abundance of water exists, the surrounding and only slightly higher land will be bone dry for most of the year and may receive so little precipitation that crops can be produced only in alternate years without irrigation. Although an abundance of water may be underfoot, the sun will shine down hot through cloudless skies through the long summer months. Apparently nature would have everything dry, yet moisture in the land is everywhere.

It is this condition that has made the great delta country of the Sacramento and San Joaquin rivers, different in crops, soil and kind of farming from the country round about. The Kings river delta provides even more of a contrast with the surrounding country, as the rainfall is much lighter, the summers hotter and there are no rivers apparent as a source of the water, though the soil was formed by deposits from a river and to a certain extent from the tule growth resulting from the large amount of moisture present.

The Sacramento and San Joaquin river delta country was formed at the place where the rivers touched tide water, at the outlet of the valley. The Kings river delta is in the center of the great San Joaquin valley at a place where the slope of the land is, or was, such that the water did not know where to run. It was a very unique situation.

The San Joaquin valley is a great flat valley, as can be seen by the map, but has the peculiar feature toward the southern half, about west of Fresno, that water will flow both ways, depending upon how much there is of it. On the map in the center of the southern half of the valley can be seen Tulare lake, a great flat area, sometimes covered few feet deep with water, sometimes with only a small amount of water near the center, depending upon the amount of water flowing from the mountains for several years. Drainage is toward this from all sides, but when the water rises somewhat it reaches the very slight divide on the north and flows into the San Joaquin river and north to San Francisco bay. The fact that there is such a divide is hardly apparent to one traveling over the valley, owing to the fact that the rivers all get lost by the time that they get out in the center of the valley. They used to get lost naturally. Now so much water is taken from them for irrigation that almost the only very apparent waste is in flood waters.

The Kings river emerged from the Sierra foothills east of Fresno and circled around, coming to the center of the valley southwest of that city. As it reached the low and practically level country, it spread out fan shape and wandered in various directions. The flow was generally toward Tulare lake but when the water backed up, it was to the north.

When the seasons had been very wet the land was covered with water, just like the Tulare lake bed occasionally is now, and old timers have hunted ducks in boats over all of it. When a series of dry years came, the country was dry enough to farm to grain, as Tulare lake bed is being farmed this year and has for a couple of years past, or was used as pasture.

The reclamation was in part accomplished through the withdrawal of most of the water from the Kings river to irrigat over the great raisin country, but there was still the flood water of winter and spring and the fact that there was nothing to prevent that flood water and some summer flow from going where it wished. Reclamation consisted mostly in throwing up levees to keep the water in natural channels, which also serve to carry the water over the land for irrigation.

Owing to the fact that this land was flooded only in winter and spring and dried out in summer, the water table normally being several feet below the surface, the land the first year does not need to be handled like most raw reclaimed land, which is water logged and with no natural circulation of air. Although the soil frequently carries a considerable supply of peat and is covered normally with tule, it is a sediment, not a peat soil, like much of the delta country near Stockton. As yet only about a fourth has been broken and subdued, and only a comparatively little of that is settled up into small farms. The far greater part is simply used as natural pasture, and what is cultivated is mostly handled as yet in a very extensive way so that the work done will cover as much land as possible.

The main crop is alfalfa and it is by nature a dairying country, although the alfalfa is so far from being utilized that dairymen frequently do not veal their calves, but make steers from them so as to have a market for their alfalfa. On the Fitzwilliam ranch of 12,000 acres on the northwest corner of the delta, there is so much alfalfa and so few stock this year that there will be 40,000 tons of alfalfa on hand at the end of this season.

Last year high alfalfa prices made stockmen sell most of their stock so that they could sell alfalfa too, and as a result there is an unsuppliable deficiency of stock this season, although dairying is a big thing. There are a number of Hollanders on the delta who are engaged in cheese manufacture, turning out a ton of cheese a day and getting more for it than they would for butter. Creameries in, or getting much of their cream from this district, manufacture ten tons of butter a day.

Although there is so much water naturally, alfalfa and other crops have to be irrigated for the best results. This land, being naturally supplied with water from the Kings river, has riparian rights in the same, and a water right in a canal. Three irrigations are all that are needed for alfalfa, as the water table is only a few feet down.

Artesian wells have also been developed to add to irrigation supplies from the Kings river. On the Fitzwilliam ranch there are ten of these worked into the irrigation system as follows:

At each well is a reservoir holding five to eight-acre feet. This will be opened and a big head of water for irrigating provided. When this reaches another reservoir adjoining another well, this is opened into the ditch, also increasing the head so that irrigation is better accomplished than if each reservoir were used independently.

When barley is grown the land is flooded well as soon as the crop is off and plowed when ready, staying out the year like a summer fallow and having plenty of moisture under ground. Then in the fall it is seeded in the regular way and with the help of the rainfall produces well. Egyptian corn or milo is also very commonly grown after barley. In addition to alfalfa, wheat and barley and Egyptian corn or kindred cereals are the standard crops, though as the country settles up and more work per acre is given other crops will come in for moisture and rich soil, filled with decomposed vegetation makes possible many crops.

California is a wonderful State and it is the duty of each Californian to say how wonderful it is. Yet each part is different in nature and crops from other sections around it, and the Kings river delta is just one of many sections that are a little different from the ordinary and adding interest and value to California agriculture.

$45.00 SAVING

Introductory
Special Sale

$45.00 SAVING

The National Potato Digger

FREIGHT PREPAID TO ANY POINT ON PACIFIC COAST

THIS DIGGER ALWAYS SOLD FOR $125.00

Cut out this advertisement. It is worth $45.00 to you. This National Steel Frame Elevator Digger has always sold for $125.00. It is listed in our catalogue at that price. For the purpose of introducing this wonderful digger we are offering them direct to the rancher at $85.00 each, freight prepaid. We give you this saving instead of paying it out for salesmen's salary and traveling expense to come and see you. This is a $40.00 saving on the regular price plus $5.00 for freight, making a $45.00 saving in all. Digger is guaranteed superior in construction to anything you can buy. Thorough free trial allowed. Full description given in our 300 page catalogue, mailed on request. Write today.

QUALITY ARNOTT GUARANTEED

Arnott & Company
Dept. 13.
118 LOS ANGELES STR.
LOS ANGELES, CALIF.

QUALITY ARNOTT GUARANTEED

The Use Of
Hercules Dynamite
On Farm, Orchard and Ranch

THIS is a progressive age. The search for better methods and better results is never ending. In the agricultural field one of the clearest manifestations of this tendency is the ever increasing use of dynamite. It is a better method. It produces better results.

You save time, labor, and as a result, money, when you use Hercules Dynamite for the removal of rocks or stumps, the felling of trees, the draining of land, the sinking of a well or cistern, etc. You not only save time and labor but also actually make money when you use Hercules Dynamite for tree planting and sub-soiling. It greatly increases the yield of fruit and of field crops.

Write for our book, "Progressive Cultivation." It contains information on the use of dynamite that you will find valuable.

Use Dynamite For Sub-Soiling

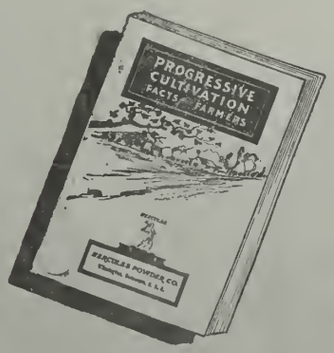
Have you ever sub-soiled your land? Have you ever taken advantage of the benefits derived from the use of dynamite for this purpose?

Sub-soiling increases the fertility and productability of land many fold. Comparative tests that have been made with corn, wheat, alfalfa, and other crops prove this conclusively.

Such a test is easy to make. Sub-soil half of a field. Leave the other half in its present condition. Then do your planting. The crop will tell the story.

If your land has never been sub-soiled you should make this test. Then decide for yourself whether or not sub-soiling is worth while.

In "Progressive Cultivation" you will find some interesting information on this subject.



Increase the Yield of Your Trees

Not once, but hundreds of times, the fact has been demonstrated that trees planted in dynamited holes, are stronger, grow faster, live longer, and yield more heavily, than trees planted in spade dug holes. Furthermore, you can plant much more quickly, more easily with dynamite than you can with a spade. As a result you gain at both ends.

If you are not familiar with the dynamite method of planting you are overlooking a factor in your work of which you should take advantage.

In "Progressive Cultivation" full details are given regarding this important use of dynamite. There is a copy waiting for you at our office. Write for it.

HERCULES POWDER CO.
Chronicle Bldg., San Francisco, Cal.

Please send me a free copy of your book, "Progressive Cultivation." I am interested in Dynamite for

_____

_____

A Bright Future for Dried Peaches

The season has opened with dried peaches worth about 3¼ to 3½ cents a pound to the producer. To produce them under normal conditions costs approximately 5 cents a pound. If the present price continued the man that could tell how to produce three tons per acre, dried, year after year, would meet little approval; rather he would be blamed for increasing production and so depressing prices, while the man that could show how to get 6 and 7 cents a pound year after year could be called one of the country's great benefactors.

And that is not an unreasonable price. It would leave a comfortable margin for packer, broker, jobber and retailer and the consumer could still get the fruit for a very moderate price, less than is usually paid at present. With such a price the peach sees before it one of the brightest futures of any California fruit.

The present condition of the dried peach market could well have been expected and provides no sign that the future will not be bright. Before getting discouraged and neglecting or uprooting trees it will be well to remember a little horticultural history of California and the old saying, "A good farmer plants cheap seed"; in other words, that the best time to go into a business is the time when prices are so low that other people are getting disgusted and quitting.

This has proved true in California. Every fruit has had a period of early glory when profits were enormous and prospects better far than those which lured the gold seekers across the continent. Popularity resulted in heavy production, glutted markets, ruinous prices and an apparently hopeless outlook, so that people got disgusted and quit. Then in a year or so it was found that the demand had more than caught up with production, that more fruit was being sold than had ever been dreamed possible, that the industry was established on a substantial foundation with an ever-growing market and reasonable prices. This happened with almost every fruit grower in California. It is happening with peaches.

Just three years ago peaches seemed so promising that an attempt was made to corner the market at 10 cents a pound—rather an expensive experiment it proved for those that tried it—but it showed big faith in the industry by a leading packing company and indicates that the situation by which only 3½ cents a pound is being offered to the grower is temporary and unreasonable.

The dried peach is only touching the markets that it will ultimately supply and although it is more than any one at this time can do to force the price up to where it belongs, it is clear from an examination of the case that later on good prices can be secured for an immense amount of this kind of fruit.

There is a great opportunity for dried peaches. They have just been left to look after selling themselves thus far, which is no way to develop a demand, and it only needs some one to take hold and sell them to make them jump ahead so fast that it will be all that California can do to supply the trade. Something about possible markets will be told later. The nice thing about it is that California is the only country that there is to supply the demand. She has the whole field to herself.

And why should not peaches be consumed the world over and appear on every table? The peach is one of the finest fruits that California can produce, which means the finest in the world.

The peach needs no introduction to the consumer, almost unknown to many people though it frequently may be in its dried form, for it is grown and consumed fresh in almost every temperate section of the world and the California canned peach is the best known and most appreciated of all California canned fruits. This should, with proper advertising and selling methods, make it easy to introduce the dried peach to a far greater extent than it is at present known, and to increase its use immeasurably.

A few facts will show some surprising possibilities. Our last dried peach crop was 23,000 tons, 46,000,000 pounds, less than half a pound per person in the United States, omitting Europe entirely, which continent bids fair to prove one of the greatest factors in the market that there is. Of all the dried fruits, excepting figs alone, peaches have the greatest weight of flesh for the price and substantial merit as well. With everybody knowing peaches and liking them, with some fruit dessert needed on every table every full meal, what is half a pound a year, with prices at bedrock? Nothing at all. Two to four times as many California prunes go into consumption every year and two to three times as many raisins, and those are not used half as much as they can be.

There are two very fundamental things about dried peaches and possible markets: first, their cheapness; second (and partly a result of the cheapness), the great body of possible consumers. There is a necessary and unavoidable difference in price between producer and consumer, but peaches can bring 7 cents to the grower and retail at 12½ cents, if the retailer can be made to take only a normal profit. With no trouble 15 cents could be a good retail price. Peaches dry 4 to 1, better, after the pit is removed, or 5 to 1 including pit, meaning that after the peaches have been soaked in water and swell up to original size the cost is only 3 to 4 cents a pound.

Talk about the high cost of living—this is one of the finest foods in existence, more pleasant as dessert, agreeable and healthful by far than mushy puddings and such things, and much easier to prepare and yet so cheap. From the standpoint of economy and desirability there is every foundation for a big demand. There remains simply the need for systematic marketing to get the consumer to appreciate the fact that he can get such fine fruit at a moderate price, and there is need for a little education as to the best way to prepare peaches for the table.

It is a striking fact, indicating great possibilities of development, that there are some big inconsistencies in distribution of dried peaches. Every dealer has special parts of the country where he is strong, so no definite data can be obtained regarding distribution, but it is a significant thing that the South, that is, the gulf and neighboring States, take an exceeding large proportion of our dried peaches. This is not easily explained whether it is through cheapness, a greater familiarity with the fresh peach than the rest of the country, a warmer climate and therefore a greater demand for fruit, or what. It simply shows that the rest of the country is unfamiliar with the dried peach. If they could consume as many in proportion to the South the consumption could be doubled and our present trouble overcome.

Europe, however, provides the greatest, or at least the most apparent market open for development. The average individual may not appreciate it, but it is the European demand that governs prices for California prunes and apricots. It is there that an immense amount of these two fruits go, and even so, the demand has been increasing by leaps and bounds, while the dried peach, which by rights should have a bigger

DRIED FRUIT EXPORTS.

The following shows the leading shipments of dried fruit from San Francisco by sea to foreign countries during the year ending July 31, 1914. There is also a great amount of fruit shipped across the continent by rail and reshipped by steamer to Europe, which is not included here: Prunes, 35,525,256 lbs; apricots, 6,224,152 lbs; peaches, 3,991,202 lbs; apples, 1,235,732 lbs; raisins, 5,935,120 lbs.

Prunes were mostly sent to Germany, France, Belgium, Netherlands and Canada.

The largest quantity of prunes shipped in any month during the given year was in October, amounting to 12,502,565 pounds to France.

The total exports from the whole United States of the fruits named above for the year ending July 31, 1913, were: Prunes, 117,950,875 lbs; apricots, 35,016,730 lbs; peaches, 6,529,633 lbs; apples, 41,574,562 lbs; raisins, 28,121,507 lbs.

Of the above fruits with the exception of apples and prunes, California has practically a monopoly and produces the greatest part of the prunes by far.

Stey-Brae Ayrshires
BULLS FOR SALE

From imported cows. These bulls are large, with good colors. For particulars and prices, address

E. B. McFARLAND
San Mateo, Cal.

Advance Pump Governors.

You're losing if not using ADVANCE PUMP GOVERNORS. Consider the following facts. It makes the hardest working pump work easy; it can be adjusted to lift any weight desired, from about fifteen to two hundred pounds, by turning the nuts at top ends of the levers. Your windmills will pump more than double the amount of water.

Price $5.00.

Agents wanted. Agents can make $5.00 a day easy. Write us for selling plan.

PAUL P. LANG CO.,
357 12th St.,
OAKLAND, CAL.

The Future Man or Woman

The food taken by the nursing mother influences the physical development of the child. Children should be fed on nothing but the most strengthening foods.

Ghirardelli's Ground Chocolate is both a food and a drink.

Children need no coaxing to take it. They like it and thrive on it. It is the final expression of purity, wholesomeness and deliciousness.

The cost is less than a cent a cup. Begin using it tomorrow.

In hermetically sealed tins.

Quality, strength and price remain the same.

Ghirardelli's Ground Chocolate is the only original ground chocolate. It has been used in Western homes for over a third of a century and its popularity is growing day by day.

D. GHIRARDELLI CO.

Since 1852 San Francisco

GHIRARDELLI'S GROUND CHOCOLATE

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

market than either prunes or apricots, is only just getting a start there. Let this European market, which is only partially developed for prunes and apricots, take as many peaches as it does either prunes or apricots, and there will be hardly any peaches left for American use. The war may prevent any help to the California peach this season, but the future demand is there.

In the season of 1912-3 America exported 53,000 tons of prunes, mostly to Europe, nearly double our average dried peach production, two or three times as many as were exported ten years ago. The same season we exported, mostly to Europe, over 17,000 tons of apricots, which would leave America few peaches indeed, and this demand has doubled or trebled in the decade also, and are both growing.

Now see how unreasonable the condition is as applied to peaches. Price is a fundamental factor in European demand. When prune prices are high the demand falls off, subject, though, to the European prune crop. The peach is the cheapest fruit of the three by a good margin and ought to be more used in Europe than either prunes or apricots.

In 1905-06 there were only 550 odd tons of the inexpensive, desirable peach exported, against 6,500 odd tons of apricots and 12,400 tons of prunes.

But now the pleasant feature is that the European demand for peaches is growing. The entering wedge has been provided and European dealers are beginning to use dried peaches when they feel that other dried fruit is too high for their customers, which is introducing the fruit and developing a taste for it. Although apricot imports into Europe were 1,000 per cent less in 1907-08 than in 1905-06, owing to decreased supply and higher prices, peach imports held up to normal. Since then they have grown rapidly.

In 1908-09 there were 1,200 tons exported from the United States, largely to Europe; the following year, 1,300 tons; then 3,500 tons; then 2,200 tons; then 3,200 tons. Later figures are not on hand, but will very probably show much better than anything given, though the European consumer still looks with disfavor on the peach and considers it only a rather unsatisfactory substitute for the apricot.

The prejudice against the peach is due to inexperience and ignorance as to the best method of handling and cooking. It is not an attractive appearing fruit dried, and the fuzzy skin makes it less agreeable than the smooth-skinned apricot. Wrong methods of cooking can do it a big injustice, and although it is true that the dried peach is inferior to the apricot in flavor and cannot compare with the canned clingstone in richness and flavor, right methods of preparing it for the table make it an excellent delicacy and a dessert of high merit. Instruction by advertising and demonstrations in retail stores, an introduction to the consumer and the pushing of sales self-evidently make a fruit of this merit susceptible of a market far and away beyond the ability of present production to supply.

There are these definite facts to remember. Present consumption in the United States is insignificant; the geographical distribution of that consumption indicates that a uniform consumption all over the country would require a far greater supply than at present exists; the inexpensiveness of the product even when fair returns are secured for the producer merit a very extended use; overcoming the ignorance of the true worth of the peach when properly prepared as a dessert can make it very popular; its cheapness, with merit, is just what Europe wants and Europe the last few years has been developing with marvelous rapidity as a dried fruit market; Europe now is using more prunes and nearly as many apricots as our total dried peach production and the dried peach is just beginning to be known by the European consumer, it is in just about the same position that prunes and apricots were ten years ago, therefore at the beginning of a vast increase in use. Whether the present war will diminish its use for a while, or whether the resulting call for cheap food will vastly stimulate the present demand cannot be stated. The final standing in Europe can only be to the advantage of the producer. That will mean a demand for many more peaches than we now produce, or very high prices. Meanwhile, domestic markets can be increasing likewise.

It is harder to tell how to bring about the blessed condition of good peach prices than to tell what the future promises. It is, however, at least of definite value to know that the future is bright and that whether any definite steps are taken or not to expand the market, the peaches of their own merit will make their own way and are making it. Peaches can make their own way under present selling methods; they can go ahead faster when their sale is systematically accomplished and they are not left to sell themselves.

SOME COUNTY NEWS.

As size of crops and general conditions throughout the State are clearly known this part of the season, it was decided not to have a page on "California Crop Conditions" this month, although in every county there are facts which should interest fruit men and farmers anywhere. Thus the following interesting statements have come in from county horticultural commissioners.

The shipping of grapes has been in full swing. The quality of the fruit is superior and excellent. Peaches are still being cut and the crop is large. Many growers will start picking grapes for raisins the last of the month, Sultanas and Thompsons seedless by the twenty-fifth. Because of advance orders, the conditions are believed to be favorable for good opening prices. The fig production will very likely prove to be the greatest Fresno county has ever had, as the trees are breaking down from the weight of fruit. Last year's production for the county was 2,600 tons and I believe that of this year will be over 3,000 tons. Prices on figs are always good and $80 to $105 per ton is now being offered, depending on the variety.—FRED P. ROULLARD, Fresno county.

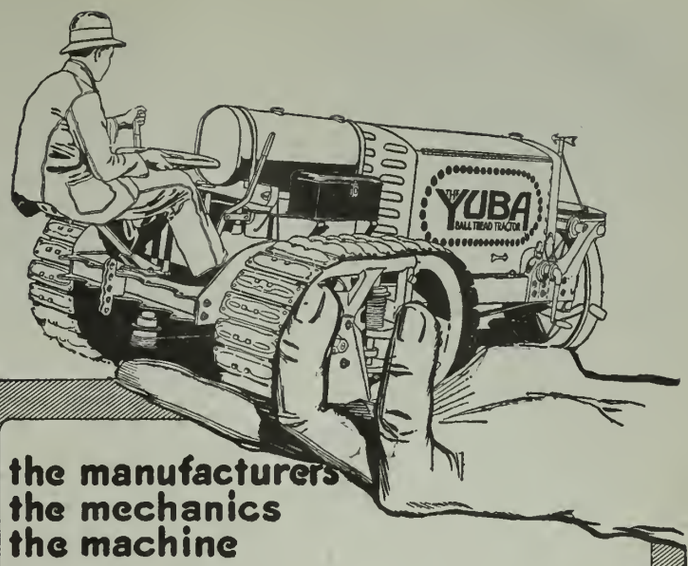
Fumigation for coccus citricola is progressing as rapidly as possible with 200 tents in the field. About 300 acres have been done to date (August 20), with most excellent results. Although the European war is advancing the price of cyanide and may even make it difficult to obtain, it is hoped that a sufficient quantity for fumigation work will be available this season. The sugar beet season is over and factory closed after a successful season. Prune harvest will soon be on and the crop is good.—CHAS. F. COLLINS, Tulare county.

FELLING A TREE ALONE.

It is not easy for one man alone to cut down a tree with a saw, and the suggestion made in an exchange through one of its subscribers may come in handy to many readers of Orchard and Farm.

Tie a cord to a limb of the tree and let it drop to a point where the absent man would stand and attach it to the handle of the saw. This will hold the end of the saw in place and keep it from trembling and one man can do the work near as easily as two. Try it.

There were 9,000 persons taking correspondence courses with the University of California this summer, 8,000 of whom were studying agriculture and only 1,000 other university subjects. In addition 2,000 others are registered in a course in dairy industry just started.



the manufacturers
the mechanics
the machine

Yuba Ball Tread Tractors are built by the Yuba Construction Company in their plant at Marysville, California.

Back of this concern is ten years' experience gained in building gold dredges, suction dredges and irrigating pumps

To mining engineers, Yuba Gold Dredges are the standard.

THE YUBA BALL TREAD TRACTOR

The average earning capacity of the largest gold dredge is one thousand dollars a day. A delay caused by faulty construction or broken parts is expensive.

The same engineering skill and the same mechanical accuracy that reduces possible delays from such causes to a minimum in Yuba Gold Dredges are exercised in building Yuba Ball Tread Tractors.

As for the machine—there is a booklet describing it.

THE YUBA CONSTRUCTION CO.

433 California Street San Francisco

Dept. B.—3

Works, Marysville

LEAF-EATING INSECTS.—I have tried in vain to grow kale for my rabbits, but something eats it up. I think it is cutworms. We have used lime, but it does not seem to do any good. In fact, I believe the worms get fat on it. We are trying to raise hubbard squash, and the ladybugs and another bug like it, but with different markings, seem to eat the vines up. Please tell me in your columns how to get rid of them and if Paris green and strychnine would mix well and be effective with lime. Would it be all right to plow under the lime with manure?—MRS. L. E. W., National City.

Very naturally, if you grow the kale for your chickens, it will be impossible to put poison on the leaves. If lime is ineffective in keeping off the cutworms, you might try gypsum saturated with kerosene or turpentine and sprinkled on the surface of the ground near each plant. For the squash plants, where poison can be applied without danger to anything except insects, an entirely different course can be pursued. The regular method of killing insects that actually eat plant tissues is to put on Paris green or some other poison, so that when the insects eat the leaf they will eat poison, too. Strychnine is not applied to growing plants, unless a person wants to kill the plants as well as the insects. It is applied only to cut vegetables set out as a bait; like cabbage leaves, slices of potato, a handful of green alfalfa, and so on. And don't confuse its use with that of lime for cutworms. The lime is not a poison at all, only a disagreeable substance that repels insects. In the article on cutworms in the August issue the lime was sprinkled on the soil as a repellant and the strychnine was placed on bait. To poison insects attacking squash, try mixing a pound of Paris green with twenty pounds of flour, sprinkling it on the vines, or five ounces of Paris green and a pound of air-slaked lime. The latter is used in this case only to dilute the Paris green and make it sprinkle good. Then for the cutworms, if the gypsum is not sufficient, you can try bait poisoned with strychnine according to plan advised in August issue. The green insect with black spots you refer to as a ladybug is not a ladybug, more correctly, ladybird. Real ladybirds are red, perhaps with black spots, and are very good, for they eat other harmful insects. The green insect is a diabrotica, which is the common as well as scientific name. The other you speak of is probably the striped cucumber beetle. A real squash bug also attacks squash plants, sucking the juices instead of biting the foliage, but this is controlled in other ways entirely. Do not mix lime with manure. How it would work to drive off cutworms, we don't know, but it will destroy much of the value of the manure. Gypsum on manure is good. If the lime touches the manure in the ground only, it will be all right. Lime is good for soil.

LESPEDEZA.—Noting an article in an Eastern farm paper regarding Lespedeza, "the new pasture crop of the South," I would greatly appreciate your advice as to where I can obtain seed of the plant, whether it has been grown in California and with what results, etc.?—MRS. E. S., Glen Ellen.

Lespedeza was tried in California many years ago, but was not a success and we do not know of a place here where it has established itself and become of any economic importance. From our reading of Eastern papers would judge that for a considerable time it has been firmly established in the Gulf States and is of high value there and whether it is due to the dry atmosphere of California summers, the nature of the soil, lack of summer rains, or what, that it is not a success in this State, we do not know, but it is not. Leading seed houses of California carry the seed, but inform us that as a rule it does not even germinate as well as it should. Many valuable plants of other places have been tried in California and found wanting decades ago, and although new things are always worth trying, even though they may have

Answers for Farm Problems

failed before, they should usually be tried on a very small scale and with little hope of spectacular results. One or two new crops, of course, are being found good for California every now and again, but many more are failing.

DRYING FIGS.—Can you give me some information on how to dry pack figs for home use? I send your good paper to Pennsylvania after reading.—MRS. E. C. F., Corning, Cal.

Figs need very little processing to keep for home use. Henry Markarian, one of the most successful fig growers of California, and others, picks the figs up from under the trees, puts them in wire baskets and dips them in salt water for about ten minutes, then puts them on trays and dries them in stacks, making an excellent product. We kept a box of these figs in the house in the damp bay climate until used up and had no trouble whatever. A dried fig will keep properly without any processing, provided it is well dried, clean and free from insects and kept away from them. Figs can be dried in any way, but should not be permitted to dry hard.

BASIC SLAG.—I am having some difficulty in finding a commercial fertilizer known as basic slag, or Thomas phosphate. Nobody seems to keep to it and very few know it by name, so I am writing you in hopes of your being able to help me by letting me know any firm that keeps this fertilizer on hand.—T. B., Winlock, Wash.

This fertilizer, also called Thomas phosphate and several other names, and of high standing as a phosphoric fertilizer in some parts of the world, is hardly used on the Pacific Coast, though a large company with offices at San Francisco and elsewhere, whose name we send you, introduced this fertilizer here several years ago and probably carries it yet. This fertilizer seems especially desirable on sour soil lacking in phosphoric acid, but for ordinary phosphoric fertilization on the coast superphosphate is normally used.

BOOKS ON LIVESTOCK—What book or treatise is there obtainable dealing extensively with cattle raising, also hog raising, and where can these be obtained?—H. J. H., Crows Landing.

The Iowa Agricultural College at Ames, Iowa, the Nebraska Agricultural College at Lincoln, Nebraska, and the Kansas Agricultural College at Manhattan, Kansas, being located in the great corn belt of the Middle West, have for years experimented along the lines of raising beef at the least cost possible. Each of these colleges has bulletins treating on this subject and the information a person can get from these bulletins will be a great help to him. The Breeders' Gazette, 358 Dearborn street, Chicago, publishes Sanders Shorthorn History, price $2, which will be a big help in cattle raising. The Hereford Journal, Kansas City, Mo., also has issued a book on Herefords that should be of value, though we know of no one book dealing comprehensively with cattle raising. The Breeders' Gazette publishes Swine, by Dietrich, The Hog Book, by Dawson, each of reputation, and other books on all kinds of live stock, a catalogue being sent free on application.

BULLETIN ON LABOR CAMPS

The California Commission of Immigration and Housing has issued a 54-page bulletin on camp sanitation and housing, which contains very valuable illustrations, instructions and directions regarding housing and care of labor camps for employers of large amounts of farm labor and others. Every ranch owner who expects to have a large body of transient farm help on his place should get this bulletin, which can be had on application to the commission at 525 Market street, San Francisco. Unfortunately in the bulletin and in letters sent to the press with it the commission is still harping on the Wheatland hop riots and trying to use them to emphasize its own value.

Excellent results have been secured recently in several places by the United States Department of Agriculture with the adsuki bean, introduced from Japan. The amount of straw produced is very small, but the bean has a large yield of seed, makes good flour and possesses a delicate favor. A very peculiar feature is that the bean can be popped like popcorn. Details regarding it are given in a new bulletin on "Five Oriental Species of Beans."

Politics is the mother of verbal inventions.

"For the Best Out-of-Town Trade"

The HOTEL MINSTER

San Francisco

A hotel rigidly respectable, catering to the best out-of-town trade. A family and commercial hotel where a woman traveling alone need not fear to live. Newly renovated. Located on O'Farrell Street, corner Mason, just one block from theatres and shops. The only hotel in the downtown district having four street frontages. All baths, as well as bedrooms have a street outlook. Mr. and Mrs. Roy G. Mitchell, Managing Partners.

RATES

Room, with private bath, $1.50 per day.
Room, without private bath, $1.00 per day.
Special rates for permanent guests.

Minster busses do not meet trains, therefore take any taxi to the hotel at our expense. **Write for reservations.**

Answers for Farm Problems

FEEDING YOUNG COLT — Please tell me what to feed a three-months-old colt? There is no green feed. At present the colt has been taken away from the mother. Will rolled barley soaked harm it?—Mrs. S. L., Pine Flat, Cal.

Answer by W. M. Carruthers.

A foal should begin to nibble at grain when he is around a month old, sometimes earlier. His first food should be oatmeal. He should be allowed such trifling quantity of this as he will eat. It will only be a very little at first. When he is six weeks old a little bran may be added. At two months old some sweet skim-milk may be substituted for part of the new milk and so on until when he is three months old the orphan foal may have about all the sweet skim-milk he wants three times a day. He will then be eating plenty of oats. If the owner of the colt has no oats he better buy a sack or two, as the colt will thrive much better on oats than rolled barley. The less rolled barley young stock receives, the better success will be accomplished in their development. Let him have grass as soon as he will eat it. Never feed sour milk or sweet milk from unclean vessels. Keep him in a lot near the house and give him company, if it is only a runty calf. Pet him and coddle him all the time that can be spared, and in general treat him as every orphan should be treated—with loving kindness and care. Never confine him closely in a stall. Let him run. The rearing of a motherless foal is mostly in the man or woman who essays the job.

TOMATO ROT—What is the cause and cure for the black rot that is destroying all my tomato crop?—G. F., Grass Valley, Cal.

If by the black rot you mean the rot that starts at the blossom end of the tomato, will state that there is no known cause or cure for this trouble. It varies in abundance from year to year and is apparently worse on dry ground where the vines do not receive regular irrigation.

OBSCURE PLANT TROUBLE — Will you be good enough to advise me as to a trouble which has been with us this season in our gardens? I take it to be mildew or fungus of some kind, but I will describe my own experience, which is similar to that of others. My string beans were looking finely and were just ready to use, when some blight came on them, and in a few days the leaves were dry and parched. I should have started with peas, as it first showed on them, but the worst of it was my melons. My cantaloupes were lush and luxuriant, with an abundance of melons from the size of an egg to, say, like a cocoanut. All at once I noticed that the leaves in the middle of the hills of some of them began to look parched, as if sunburned. It kept on until nearly all were only a mass of dead, dried-up leaves; the fruit stopped growing and withered on the vines, with not a particle of cantaloupe taste—all a dead loss and ruin. The watermelons were only slightly affected, until the past week, when they also became limp and withered, as if suffering from drouth, which was not the case. It is pretty sure some fungus, for which you may be able to advise a remedy. How would it do, another season, to soak our garden and melon seed in a light solution of copper sulphate, as is done with wheat as a preventive of smut? Could it be that I kept my soil too moist?—though I think not. I anticipate you will advise Bordeaux. If so, please say how strong to use it and when to apply it. —Harry B. Jones, Ladoga, Colusa county, Cal.

It does not seem possible that this is any definite disease, like a fungus, or you would have noticed it, nor does it appear likely that the trouble was caused by an insect, or you would have noticed it also and would have mentioned definite symptoms. Likewise it is highly improbable that any one disease or insect pest would attack both the melons and the peas and beans in about the same way, and the only thing left seems to be soil trouble. Likewise we know of no insect pests or diseases that would be likely to affect the plants named as described. There being no definite disease, Bordeaux would be useless. Soaking the seed would be only a blind guess under the conditions and not likely to succeed. As a general principle it is unwise to try to grow any plant in ground where similar plants were diseased or died the previous year.

Since no disease or insect pest is apparent, there is a chance that soil trouble is causing the death of the plants, perhaps alkali, perhaps over-irrigation on the land or close by, and the consequent rise of the water table. The plants you name will not stand much alkali. Would suggest that you dig down into the soil and see if it is water logged, poorly aerated, or the water too close to the surface. See if you can find traces of alkali also.

It is hard to diagnose plant troubles from a distance, unless they are of a common occurring type, and would suggest that you have County Horticultural Commissioner G. R. Boedefeld of Colusa come to investigate the trouble on the ground and advise treatment.

It is just possible that mildew may have affected your peas and beans, though it is rather late for them, mildew mostly occurring early in the season and under rather moist atmospheric conditions. Dry sulphur would be the control in this case. Perhaps melon wilt attacked the melons. For this there is no cure and no melons should again be planted on the land.

RIPARIAN RIGHTS—Owning a farm whose boundary is the Pajaro river, what steps are necessary for me to take for taking water from the river for irrigation purposes?—B. E. B., Oakland.

Answer by Prof. B. A. Etcheverry, University of California.

It would seem from what is stated that the farm, the boundary of which is the Pajaro river, is riparian to that river, and therefore the inquirer has the right of riparian owner. Even though he may not have been making use of this right, his right is superior to that of any party not a riparian owner who may want in the future to divert water from the river either above or below him. This riparian right is equal to that of all other riparian owners on the stream. In addition to riparian rights, there may be rights which have been acquired by prescription or adverse use of water above him, which would be superior to his right. This can only be determined by personal examination of the river. If your inquirer is satisfied that the diversions above him leave sufficient water in the river for his use, he would be very safe in taking the water for his purposes. As a riparian owner, it is not necessary for him to take any preliminary steps before taking this water out.

GROWING LOGANBERRIES — Have you any writings on the Loganberry, as to the method of growing them? I would be glad to get information on the subject.—A. B., Illinois.

Would advise securing the bulletin spoken of in August issue on Loganberry by-products from Oregon Agricultural College, Corvallis, Oregon. This college has given considerable publicity to the Loganberry and will doubtless be able to send you more matter on its culture also. A few facts about its culture were given in our January issue of this year. The Loganberry is grown on frames of some kind, usually on wires stretched from post to post along the rows. The vines are propagated from rooted tips. The variety is a fine grower and excellent producer. The main value of the fruit is for canning or preserving, though it is good for table use when dead ripe. Of late years it is proving extremely profitable and popular in berry growing districts of the West. How it will do with you we do not know.

"Do you suppose the auto will ever do away with the horse?"

"No, but they are doing away with lots of chickens."

CORN HARVESTER with binder attachment, cuts and throws in piles on harvester or winrows. Man and horse cut and shock equal to a corn binder. Sold in every state. Price only $20.00 with fodder binder. J. D. Borne, Haswell, Colo., writes: "Your corn harvester is all you claim for it; cut, tied and shocked 65 acres milo, cane and corn last year." Testimonials and catalog free, showing pictures of harvester. Address PROCESS MFG. CO., Salina, Kans.

The Farm that is equipped with the

Waterloo Boy Engine AND THE Woodin & Little Horizontal Centrifugal Pump

is not at the mercy of the weather. No matter how hot, cold or dry it may be, no matter what the conditions, this engine and pump will work steadily and well. And backing up the long and continuous service which this pump and engine will give is the intelligent and cheerful personal service which the Woodin & Little Pump House extends to all its customers.

Whatever is needed in the pump line you may be sure we have it. Whatever is purchased from us you can rest assured is of the highest quality.

Those wishing detailed descriptions of the pump and engine here illustrated together with catalogue of the big line of

Pumps for Every Service and Use—Gasoline Engines—Wind Mills—Pipe-Casing—Fittings—Brass Goods, etc.—can have it free of charge. Address:

WOODIN & LITTLE—PUMP HOUSE

33 to 41 Fremont Street **San Francisco, Cal.**

We carry the largest line of Pumps in the United States.
Call upon your nearest dealer for our proposition.

What the Telephone Map Shows

56.8% Exchanges Bell-connected, but not Bell-owned.

23.5% Exchanges Bell-owned.

10.5% Exchanges not Bell-owned or connected.

9.2% Places served by two companies.

EVERY dot on the map marks a town where there is a telephone exchange, the same sized dot being used for a large city as for a small village. Some of these exchanges are owned by the Associated Bell companies and some by independent companies. Where joined together in one system they meet the needs of each community and, with their suburban lines, reach 70,000 places and over 8,000,000 subscribers.

The pyramids show that only a minority of the exchanges are Bell-owned, and that the greater majority of the exchanges are owned by independent companies and connected with the Bell System.

At comparatively few points are there two telephone companies, and there are comparatively few exchanges, chiefly rural, which do not have outside connections.

The recent agreement between the Attorney General of the United States and the Bell System will facilitate connections between all telephone subscribers regardless of who owns the exchanges.

Over 8,000 different telephone companies have already connected their exchanges to provide universal service for the whole country.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

ORCHARD and FARM
ESTABLISHED 1886
IRRIGATION

VOL. 26 SEPTEMBER, 1914 NO. 9

Issued Monthly at Hearst Building, San Francisco, Cal.
Country Life Publishing Co., Publishers
D. J. Whitney ----------Editor
D. W. Hill--------Advertising Manager
Wm. Tyler Smith--Circulation Manager

Eastern Office,
Wallace C. Richardson (Inc.),
41 Park Row, New York

Middle West Office,
James A. Buchanan,
Marquette Bldg., Chicago

SUBSCRIPTION RATES
One year, domestic postage paid----50c

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

MONTHLY COMMENT

From every person, on every side, there is talk of war and nothing but war. It would be better if we could forget all about it and spend more time attending to our own business. It would not affect the war one way or other, but it would affect our business and the effect would not be bad either. All are worrying or wondering about the effect of war on prices, but the facts of the matter are that we know for certain very little more about that than we do about the war itself, and those European nations are showing laudable ability to keep their mouths shut, a characteristic that is an exceptional aid to efficiency. The effect on some products, temporary and fairly permanent, we can approximate, on others we have to let events take their course. It seems fairly certain that such a vast and destructive war is bound to have a depressing effect on all the civilized world, impoverishing nations which otherwise would be fairly prosperous and good buyers, but it also would not be unlikely to have Europe become so sick of war that when this war was over, she would lay down her arms in sheer disgust, throw off the crushing burden of militarism, turn her efforts to productive uses and prosper far beyond any condition hitherto. If such would be the case, and it is very likely, all of the civilized world would be greatly and permanently benefited.

* * *

There is another recent event, one of most important in the history of the the world and one of exceeding great importance for the California farmer, that was almost overlooked in the excitement over European strife, that was the opening of the Panama Canal. Due to the check in the world's commerce, its immediate effect may hardly be felt, but its permanent effect will be great, especially for California fruit, and to some extent for all California agricultural products. It is a trade fact that the big demand for all dried fruit products comes before the holiday season. California dried fruits have had often too short a time to reach European markets to get full benefit from this holiday trade. They have had an expensive haul across the continent and reshipment by water, often with troublesome delays and always with uncertainty as to time of arrival, a thing that disgusts business, or they have had more or lass risky shipment across the isthmus of Tehuantepec. Cheaper, direct shipment from San Francisco bay to European harbor on scheduled time, along with a vastly increased amount of other trade places advantages before the dealer of dried or canned California fruits that only the dealer himself can appreciate. It will aid English markets for our Newton Pippin apple, which goes largely to England now by giving cheaper, better transportation. Already it has raised the price of Western grain in comparison with that of Chicago, simply through the cheaper haul. Uncle Sam may feel proud of his achievement from an engineering standpoint, but he can feel happy over the actual, commercial good that the canal will do.

* * *

There is a good deal of resemblance between war and politics, especially this war, for there is an awful ruction over the coming election, an immense amount of talk, and still more ignorance. When we think of the pages upon pages of official arguments regarding the threescore measures of pressing importance that the sovereign people are to sagely pass upon next November, when we think of the amiable feelings aroused by individual campaigns and the many measures above noted, we realize that ignorance and talk are boon companions and that Sherman might have been thinking of modern politics when he gave his famous opinion of war. May the public also become disgusted, rise in their wrath and sit down on the voluble reformers who would have elections every couple of months, who would make Utopian measures galore the law of the land and give us a chance to rest up!

The proposed universal eight-hour law is not the limit, there were measures even worse proposed, if not on the ballot, but it illustrates the fact that the greater the talk, the denser the ignorance, or better say, the denser the ignorance, the louder the harangue. Not one ardent supporter of this measure appears to have asked himself if the right method is being accomplished to help in the hours of labor; not one appears to stop and think that the last Legislature so highly disapproved of the way that this measure was gotten up that it turned it down cold; not one appears to consider the utter folly (granting for the sake of argument that an eight-hour day is right in principle) of forcing everything into one strict, unalterable measure; not one appears to think of the many exceptions in such a rule called for by our complex civilization; not one considers of any importance the little emergencies that demand occasional overtime; not one seems to consider of importance the fact that extra pay for overtime is the logical method of handling the matter, the way that New Zealand manages it; not one but considers it perfectly natural in their zeal for social reform to calmly experiment with and disrupt all economic life on the chance of doing some good, ignoring the chance of doing harm. It is the latter point that is the characteristic of most modern political social reformers. It is extremely gratifying to note that city citizens, whose votes the farmer perhaps might fear, are realizing, even on casual thought, that they will play havoc with California agriculture if they pass this measure. The campaign of the farmer against this measure is doing good—keep it up.

* * *

There is one definite step in labor reform that should be taken, as we see it and if taken and well conducted, it should help, not only the laborer or the so called unemployed, but it should throw a lot of desirable light on labor matters, that is the establishment of public employment offices by the State, which employment offices would bring the man and the job together. Then there would be some actual knowledge of conditions. The wail of the unemployed would be far less effectual in winter when there was a call from the vineyardists to prune his vines, from the farmer to plow his land, from the dairyman to milk his cows. In England with their old age insurance, as we understand it, each worker carries a card which shows how much work he does, whether he is a good man out of a job or a bum, and in either case a wise effort can be made to give him what is most fitting to his habits. With such a card in a man's pocket the authorities to whom we would complain, and did complain last winter and will this winter, could know whether he loafed most of the summer relying on popular sympathy and soup kitchens, or whether he really worked. It is well to emphasize that a very just complaint can be made against employment agencies to-day, and that all social reformers call for government employment agencies. It is especially well to emphasize the fact that work wanting the man and the man wanting the work, both failing to meet, is frequently not the fault of the man. It is well to realize that one cause for the prosperity of the Oriental farm laborer here is the labor contractor by which he can always get into a job. It is one of the clearest facts there is that the establishment of government employment agencies would be an immense help in straightening out our serious agricultural labor troubles. We have previously and with excellent grounds vigorously condemned some publicity from the State Commission of Labor and Housing, but with work such as they are doing in obtaining good accommodations for farm and other labor, and with the providing of efficient machinery for bringing the unskilled laborer and the job together some wonderful progress can be made. Not the least good would be the removing of a lot of the material for our weepy reformers, whose activity frequently, though not always, is in proportion to their lack of mental stability and understanding.

* * *

If that is political and economic reform supported by Orchard and Farm, just cast your eyes over our leading story this issue to see how our programme for agricultural improvement is progressing. To our mind, and we, of course, are too much in favor of the idea to be a correct judge of the case, the subject therein outlined is the greatest thing ever published in California agricultural history. We find as a general thing that the professional poultry keeper is not making more than a fair living. The best are doing finely, the poorest are failing, the business is just going along like most businesses. Down around Tulare, however, where the combination of skim milk, alfalfa pasture and other farming is being made with poultry, the poultry business is rushing forward with a boom. Where you have irrigation, alfalfa, some cows and whatever else is wanted, on a general farm, not where poultry is the main thing, you have an inside track on egg production, you cut labor expenses per dozen eggs down half, you cut the feed bill under the best conditions down nearly half. The essentials of the matter are that skim milk, the cheapest and best animal food for poultry, is available; cheap, valuable alfalfa pasture is available; with other farm advantages. Best of all, it gives the extremely desirable feature of another profitable industry, and a steady source of income to the general farm, provided that farm has alfalfa and a few cows.

* * *

We have to announce in this connection that we are not resting with the statement of the plan above in our poultry department. We have made arrangements with Prof. J. E. Dougherty, head of the poultry department at the University Farm at Davis, to become a steady contributor and to work with us each issue. The poultry division at the University Farm is one of the greatest parts of that institution, and Prof. Dougherty has everywhere the reputation of building up his department in extremely practical and effective form, rather than working along theoretical lines. Some very important results have been achieved under his guidance and Orchard and Farm is to be highly congratulated.

Take his contribution this month, for example, "The Egg Show—Its Value," a neglected subject with the widest possibilities. How many of those who read this know enough about egg marketing to amount to anything? Few except those who ship to market. Can you candle eggs, sort them out properly for size, shape and color? Do you know how many of the eggs you send to the grocery would grade extras, how many selected pullets, how many firsts, seconds, and into what grades they would go for this reason or that? What commercial success can be expected until the producer does know the quality of his goods? The results of the poultry show have been excellent and nearly every town of any size holds a poultry show, yet it should be economically of far less influence than the egg show, as yet neglected. Compare the influence of horse racing upon livestock with the influence of the livestock shows at the State Fair and elsewhere and you have an idea of the good that egg shows can do. The egg show is a thing that will have to come, we herald its value. We are starting a programme of definite economic improvement on the farm and we are getting things done that are worth while.

* * *

The State Fair of recent years has been developing rapidly into what a State Fair ought to be. Some years ago it was largely given over to side shows and various amusements, possibly with the idea of attracting visitors and securing money to pay expenses. Not long ago a definite step was taken in cutailing side-shows and amusements and supporting the livestock and other substantial departments better. Results were so good that the policy has been emphasized in later fairs, and this year will see, judging from the entries and other indications, the greatest fair ever held. The livestock department it is of special importance as a test of strength before the great Panama Pacific Exposition in 1915. If you usually attend the fair, you will go this year; if you do not, attend so as to get a line on the exposition livestock show, get in training for it so that you can better appreciate it.

APPRECIATION.

I think "Orchard and Farm" one of the "grandest" papers published—R. E. GREGSON, Sebastopol, Cal.

I want to let you know that we appreciate "Orchard and Farm.' It is good dope for a farmer. What a farmer needs is good, practical suggestions and little stories of real experience, and you get them both.—A. F., San Jose.

To my mind "Orchard and Farm" is the best paper printed of its kind.—C. DELEURAN, San Francisco, Cal.

SUNFLOWERS.

It may be interesting to know the number of uses one may get from the sunflower.

I planted some as a wind-break, a shade for the chickens, a honey wonder for the bees. The leaves were fed to the cows, seed to the chickens, heads and stalks are used to kindle the fire. All my trees are only yearlings. Some of the sunflowers grew 12 feet high, so I found them ornamental as well as useful.—A. ROSS, Ripon, Cal.

Poor roads impose a tax never more keenly felt than at grain-hauling time.

Programme For State Dairy Show

Rapid progress is being made for the State dairy show to be held in Modesto on October 14 to 17, under the auspices of the Modesto Chamber of Commerce, the Stanislaus County Board of Trade and "Orchard and Farm." For this show, or in the conventions that are to be held the first two of the days named, the following organizations will be represented or lend their advice and assistance in making the show a substantial success:

The California State Dairy Association.

The California Creamery Operators' Association.

The California Creamery Managers' Association.

The California Jersey Cattle Club.

The California Holstein Breeders' Association.

The California Swine Breeders' Association.

The College of Agriculture of the University of California.

The California Livestock Breeders' Association.

The livestock department of the Panama-Pacific International Exposition.

The programme will be about as follows, being subject to revision as plans develop more in detail:

On Wednesday, October 14, there will be meetings forenoon and afternoon of the State Dairy Association, the Creamery Operators' Association, and possibly other organizations. These meetings will be open to the public, though of particular interest to members or others in the same line of work. In the evening addresses of general public interest will be given by persons of note. During the morning any exhibits not already in place will be placed and the dairy show itself opened to the public.

On Wednesday, October 15, there will be a review of dairy and creamery equipment at the show and a continuation of the conventions. In the evening public meetings will be held in the auditorium.

On Friday, October 16, there will be stock judging and lectures on judging and handling dairy cattle, the day being entirely given over to the dairy show and other exhibits. In the evening a banquet of the several organizations will be held.

On Saturday, October 17, the show will be at its height. Final judging will be done and all business of the different associations completed. In the afternoon Modesto and Stanislaus county will entertain visitors with an auto trip through the county.

The large auditorium close to the center of town will be the headquarters of the gathering and will serve as convention hall. Close at hand a number of large tents will be erected to hold the great quantity of exhibits of dairy and creamery apparatus. These will be brilliantly illuminated, as the show will be open in the evenings as well as during the day.

There is also on the premises a large barn, which is being prepared for the show stock to be exhibited. This will provide space for 150 head of stock. Every accommodation for these is to be provided by the people of Stanislaus county, exhibitors having no other expense than cost of feed. Special rates are also offered by the railroad on stock and other exhibits.

For visitors from all over the State railroad rates of one and one-third are to be granted, as in all important meetings where there is a large attendance. There will be an excellent representation of pure-bred stock from Modesto and surrounding districts and it is urged that dairymen who intend to exhibit or are considering doing so communicate with the Modesto Chamber of Commerce or "Orchard and Farm" at as early a date as possible, in order to facilitate arrangements.

Several very important matters are to come up for thorough consideration and action, among them the proposed universal eight-hour law and the plan for establishing a State Department of Agriculture. The programmes of the conventions of the dairy and creamery organizations will be such as to attract dairymen from all parts of California, and that, combined with the show proper, makes this one of the greatest gatherings of dairymen ever held in the West. It should be understood that this is not a money-making affair, as the show is to be open to all dairymen and persons interested in dairying, just as are the meetings of the Dairy Association, without any expense. At the same time there will be a most excellent assemblage of dairy cattle and dairy equipment, including, silos, separators, milking machines, Babcock testers, milk house equipment, dairy barn plans and fixtures and other material that will be a great help in advanced dairying.

One of the features that will be most attractive of all is the lectures on cattle judging, by the judges in the part of the show given to dairy cattle. To many persons the placing of ribbons is of comparatively little interest and value, owing to the lack of understanding as to the reasons for the placing of the different animals. In this, being a dairy show, given for educational purposes, it is planned to have the judges state the strong points of the various animals, giving exhibitors a clear idea of the things that are of most value in dairy conformation.

Modesto is very well supplied with hotels and ample accommodations will be available for as big a crowd as attends, at prices which will suit the pocketbook of every person who comes to the show. Modesto will be in gala array and decorated to the fullest extent, in accordance with the importance of the gathering.

Scene on Dairy Farm in Stanislaus County, Near Modesto, in Early Summer.

It is all right to dehorn calves as soon as the button starts, either with caustic potash or any of the prepared dehorning compounds.

LIVE STOCK NOTES.

We have received from J. W. McAlister Jr. the following statement regarding the California Breeders' Consignment Sale of registered Holsteins, which is to be held at Hanford on October 28.

This sale will undoubtedly be the biggest event of its kind ever held in the West and the stock will be an exceedingly choice lot, both from the standpoint of breeding and individuality.

There will be granddaughters from such sires as Pontiac Korndyke, the only sire who has six daughters with records of 36 pounds, including three former world's champions; King of the Pontiacs, the only sire to have eleven 2-year-olds to make over 600 pounds fat in a year; Hengerveld de Kol, the only sire who has thirty-two daughters to make over 25 pounds; Paul Beets de Kol, the first sire to have a 30-pound daughter, sired by a bull who has a 30-pound daughter; Sarcastic Lad, grand champion bull of the St. Louis World's Fair, 85 per cent of the show animals of the breed tracing back to Sarcastic Lad; Homestead Junior de Kol, sire of five 30-pound daughters, including two former world's champions; Alcarta Polkadot Corrector, sire of the famous Tilly Alcarta, former world's champion; Pontiac Hengerveld Parthenea, who has three 30-pound daughters, a bull that sold recently for $7,000; Beryls Paul de Kol, sire of 42 AR O daughters; Ignaro de Kol, sire of seven daughters with milk records averaging over 20,000 pounds milk per year.

Many of these cows will be in calf to bulls whose breeding and individuality cannot be surpassed in the United States. A number of the heifers will be in calf to the son of the famous Riverside Sadie de Kol Burke, who holds all milk records from seven days to six months and for two years.

The bulls offered at this sale will be a great lot, both as to type and breeding; in fact, the best that have ever been offered at public sale in the West. Among them is a son of the widely known Juliana de Kol, grand champion of the St. Louis Fair; Junior, 2-year-old sister of Aralia de Kol, first 28,000-pound cow.

The stock sold will be guaranteed as represented and the animals which will go from this sale will be sold to the highest bidder without reserve.

In the California Educational Butter Scoring Contest scored at San Francisco, July 27, 1914, a striking feature was the high scores made by several creameries from hot weather districts. The University Farm creamery was on top with a score of 95 per cent, and the Imperial and Holtville creameries, both of Imperial valley, the hottest part of California, came second and third with scores of 94½ and 93½. Other high scores came from all over California, Humboldt county being particularly well represented. The quality of the butter in general indicated that it was not kept cool enough and was permitted to get too sour; also in many cases that poorly cleaned utensils were used. In general the quality of butter was better than usual.

The judging of draft horses at the State Fair this year will be in the same hands as in 1913. After that fair there was considerable complaint by certain horsebreeders that mistakes were made in the placing of the ribbons, particularly in the fact that horses alleged to be foundered and roaring were placed in front of sound horses of excellent conformation and substantial merit. A little kicking is a good thing, and this and the fact that there is a good, live Draft Horse Breeders' Association in the State now should prevent even the suspicion of such trouble occurring again.

CALIFORNIA BREEDERS

First Consignment Sale

100 REGISTERED HOLSTEINS 100

HANFORD

October 28, 1914

CONSIGNORS

A. W. MORRIS & SONS ..... Woodland
McALISTER & SON ..... Chino
R. F. GUERIN ..... Visalia
G. A. HEWITT ..... Hardwick
T. J. GILKERSON ..... Stratford

All Stock Tuberculin Tested.

Catalogs Ready About Oct. 10th. Write for One.

JAMES W. McALISTER JR., Sales Manager, Chino, Cal.

COL. BEN A. RHOADES of Los Angeles, Auctioneer

Watch Next Issue for Descriptive Advertisement.

The Greatest Motor

WE have always given more car for less money than any other motor car manufacturer in the world.

We have always given a superior car, a more powerful car, a more practical car and the most economical car.

That is why more Overlands have been bought than any other similar type of car ever produced.

Now, with pride, we announce our latest car—Model 80—the greatest value this factory has ever placed on the market.

We wish particularly to call your attention to the fact that while this 1915 model has innumerable improvements, enlargements and refinements, THE PRICE HAS NOT BEEN ADVANCED.

This season we shall build 75,000 cars! This enormous increase in production again places us in the enviable and supreme position of being able to give still more value for still less money than any other manufacturer.

Following are the facts! Read each paragraph carefully!

Model 80 has a brand-new stream-line body. Its full sweeping stream-lines blend and harmonize perfectly with the balance of the symmetrical design. All visible lines are absolutely clean, unbroken and uninterrupted.

The new crowned moulded fenders, new rounded radiator, new hood slightly sloped, and flush U doors with disappearing hinges, contributing the additional touches of exterior grace and modishness which distinguish costly imported cars.

The new tonneau is much larger—both in width and in depth.

The new cushioned upholstery is also considerably deeper and softer.

This model is equipped with the finest electric starting and electric lighting system. All switches, in a compact switch box, are conveniently located on the steering column. Thus in the driving position, without stretching forward or bending down, you start the car, drive the car and control the electric horn and all head, side, tail and dash lights.

This car has left-hand drive and center control.

The tires are larger this year, being 34-inch by 4-inch all around. These tires can be quickly de-

A Few of the 9

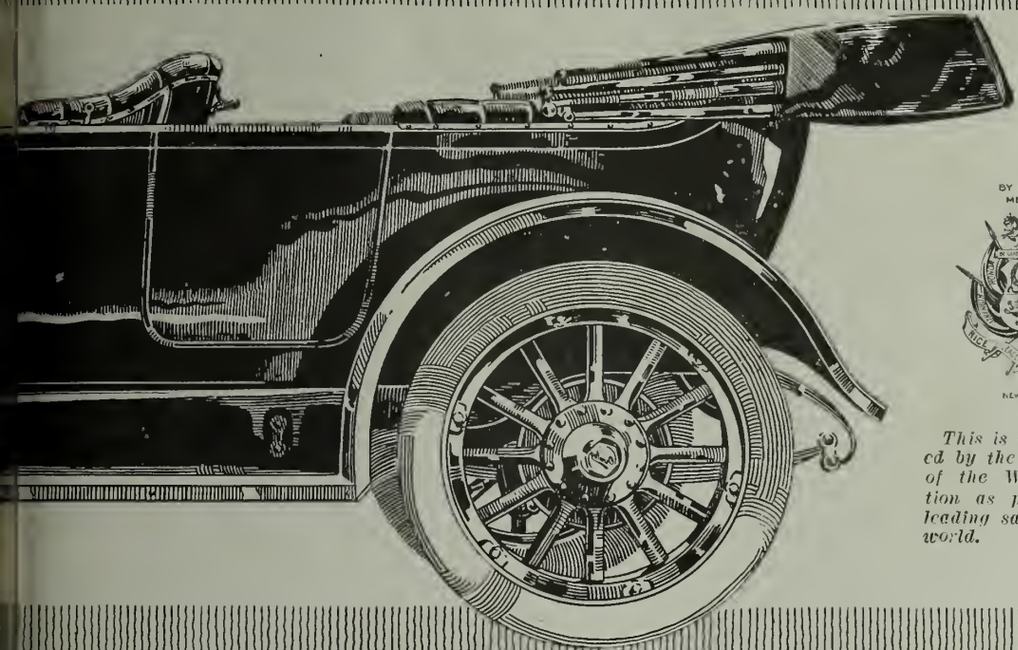
Motor 35 h. p.
New full strea
Instrument boa
Individual fron
Tonneau, long
Upholstery, de
Windshield, r
built-in.
Crowned fende
Electric starte
Electric lights.
High-tension
Thermo-syphon
Five-bearing c
Rear axle, floa
Spring, rear, 3
slung.
Wheel base, 11
Larger tires, 3
Demountable r
Left-hand dri
Beautiful new
Complete equi

The Willys-Overland

Two passenger Roadster $1050

The Willys-Overland of C

1915 MODEL 80 $1075



BY INVITATION MEMBER OF

NEW YORK U.S.A.

This is the car selected by the Rice Leaders of the World Association as prizes for the leading salesmen of the world.

Value Ever Offered

80 Features

cks.

tilating type,

long, under-

body finish.

tached from the rims, which are demountable. One extra rim furnished.

Ignition is high tension magneto, independent of starting and lighting system. It requires no dry cells.

Fundamentally the chassis remains as before. The front axle is larger; the wheels are larger; the frame is heavier and stouter; gears are made of 3½% nickel steel; there are integral grease cups in spring bolts; and other mechanical refinements which are described in detail in our new catalogue.

But otherwise in no possible way could we improve the splendid Overland chassis that is giving such satisfactory service to 50,000 nineteen fourteen owners.

This new Overland rides with remarkable smoothness, taking the ruts and rough spots with the ease of the highest priced cars.

There is the famous, powerful, speedy, snappy, economical and quiet 35 horsepower Overland motor; and a long wheelbase of 114 inches.

This car comes complete. Electric starter, electric lights, built-in windshield, mohair top and boot, extra rim, jeweled magnetic speedometer, electric horn, robe rail, foot rest and curtain box.

This new model is ready for your inspection in practically every city and town in the country.

Dealers are now taking orders. Make arrangements now for your demonstration.

Send Coupon for 1915 Catalogue—FREE

We have just published our new catalogue. There is one for everybody—one for you. This new book describes and pictures in detail our model 80—the greatest Overland. Every one should have a copy of this new, interesting and instructive book. It is an authority. Send the coupon for your copy right now. It is free.

The Willys-Overland Company,
Dep't. 180, Toledo, Ohio.
Please send me your 1915 catalogue.

Name _____

Address (or R. F. D. _____

Town _____ State _____

npany, Toledo, Ohio

Limited, Hamilton, Ont.

Prices f. o. b. Toledo, Ohio

A Sane Method in Sheep Breeding

By W. M. Carruthers.

Since the duty on wool has been removed by the reduction of the tariff in this country, many sheep men seem to be much discouraged. The price of wool is higher to-day than it was the last two years, even when protected by the Payne-Aldrich tariff bill. When the wool men of this country get to handling their product on the same basis as the New Zealand and Australian sheep men, a staple price should or will be set and any future regulation of the tariff law should have no effect therewith. Great Britain's method of producing sheep could be handled in much the same way in California, if our sheep men would get right down to business and use the brains and science that the dairyman is using in his business in this State. There are two things which sheep are raised for and the production of sheep cannot change it for anything else.

Great Britain has no use for flocks where the blood of different breeds is mingled and intermingled all the time. This is, perhaps, why they have held the supremacy in sheepdom and led the way for all others to follow. The Merino or range sheep of Britain is the Cheviot and the Mountain Blackface. These sheep are banded together and herded much the same as the Merino flock is done in California. Their blood is absolutely kept pure. Many of the most intelligent and enthusiastic men of the British Isles are men who are breeding Cheviots and Blackfaces.

Every year drafts of ewes from these flocks are sold to the smaller farmers of England to be crossed with the long-wooled, or Down rams to supply mutton for the large cities.

The best ewe lambs from this cross are often kept by these farmers and crossed with the Dorset ram for to produce the milk lamb which is so much appreciated by the English meat-eaters. This is practically all the cross-breeding that is done in the British Isles. By pursuing this method, the bloods of the different breeds of sheep are kept separate, and by this method England has maintained a superiority amongst the other countries in the production and marketing of sheep.

Such a method could be applied in California and worked out very easily, when breeding for the market is the main object. A Merino or Rambuillet band should be run and the blood kept pure. Nothing but the best of rams of this breed should be used with this flock. The ewe lambs produced should be used to fill in when the old ewes are shipped to market. By so doing, this range flock will always be getting better from the standpoint of the quality of the wool. Another band of Merino or Rambuillet sheep should be run and crossed with the Down or long-wool rams. The lambs from this cross used for mutton purposes to supply the trade in this State.

Joe Wing, conceded the best authority in the sheep business in this country, declares that a lamb from this cross can be finished quicker and on less feed to meet the market demands than any other cross-bred sheep. Hampshires, Shropshires, Cotswolds or Lincolns can be used with success along this line of breeding. Any of the above-named mutton breed of rams will do well under California conditions, provided that care and good judgment is used in the management of the flock.

The ewe lambs from this cross may be selected to form another band of sheep to be used for producing the milk lamb to supply the winter market. The Dorset or Tunis ram should be used to cross on this band of sheep to gain this purpose. Some stock men prefer to use the Dorset and Tunis rams on the Merino ewe and select the ewe lambs from this cross to be kept as a band to produce the winter lamb. These cross-bred Dorsets and Tunic ewes may be crossed again with a straight out cross of Dorset and Tunis blood and produce elegant lambs for the winter trade. By following a system of this kind, the sheep industry of California would be maintained on a high standard for both wool and mutton, fulfilling the purpose for which sheep were created.

Methods of Handling Alfalfa Hay

To ORCHARD AND FARM: During the last month I have noticed in various farm journals a discussion pro and con in regard to the advisability of salting hay. If cattle should have a certain amount of salt per day (and it is very inadvisable to salt them irregularly) why not put some in the hay when in the stack or when piling loose in the barn? Have those who oppose this practice ever tried it?

All animals that consume large quantities of vegetable food require salt. Without it the animal runs down in health, the coat get rough, an emaciated condition results and in the end a complete breakdown.

The amount of salt necessary will vary from one to three ounces per animal per day, depending on the location of the farm and the size of the animal. One authority states that in the case of cattle ¾ of an ounce per day for each 1,000 lbs. of live weight would be about right.

Conditions with me are different from those of the interior valleys. Here within a few miles of the ocean, where we have the ocean fogs, the cattle do not seem to require much salt.

Salt makes hay more palatable. It is eaten up clean, consequently there is no waste by being pulled under the feet. This saving alone would pay more than the cost of the salt used. I sprinkle coarse salt, a grade finer than the so-called rock salt, over the hay every two feet in the proportion of about ten pounds of salt to the ton of hay.

There are many who believe that salted hay is less liable to spontaneous combustion, and statistics show that accidents of this kind are far too numerous. Farmers are not sufficiently posted on the causes of such accidents. There should be no excuse for storing uncured hay. More care should be used not to store hay that is so green or wet as to cause spontaneous combustion.

Why not try feeding straw for roughage. Place some in the manger, sprinkle (using an ordinary watering can) with a weak brine solution and watch results. This is excellent when, in conjunction therewith, one feeds some roots and concentrates. I submit this idea to your readers as it is a very common practice in the Northeastern States and Canada.

One party remarked: "What a fine fire you will have when you burn your straw!" It is to be hoped this practice has been abandoned. It is probably true that the large grain crops in the State this year have produced more straw than can be fed or profitably marketed. Why not give life to the fields by scattering the straw and plowing it under? That would increase the next crop very materially.

Better yet, be more liberal with the bedding for your animals. Use enough straw to keep them clean and warm, and to soak up all of the liquid manure. Manure has a commercial value based on the amount of phosphorous, potash and nitrogen it contains. A ton of manure is worth from two to three dollars, while a ton of liquid manure, the most valuable of all, is estimated to have a value of $7.

These are a few points that cannot be too often brought to the attention of your readers.—E. B. McFARLAND, Steybrae Farm, San Mateo.

The following was written and in type before the above communication was received and fits in well with it:

Stacking hay with salt is known to be a good thing, but the use of salt for first crop alfalfa hay by a Fresno county dairymen puts a new angle on the matter that is worth noting. The story comes in directly and each one can draw his own conclusions regarding it.

By the use of a lot of salt two things are accomplished. First, it can be put up quite green without danger of spoiling, or of catching fire by spontaneous combustion as alfalfa may if put up too green. In the second place, the amount of moisture in it will keep the foxtail soft and make the heads edible instead of a danger. The salt itself adds enough to the palatability of the hay to justify its use if it has no other good.

The explanation of the way the method works out, provided the plan it stated correctly, is something like this. Salt is a preservative, and, although alfalfa put up too green will start in to heat up and can easily be ruined, and very nearly as easily catch on fire, a lot of salt will check the chemical action that would otherwise develop if no salt were present, therefore there is no heating and no spoiling. The dairyman trying this is reported to have had two stacks catch fire by being put up too green last year, but salted stacks put up still greener this year did not even heat up.

And for the foxtail, salt draws moisture, so it prevents the stack from drying out and keeps the foxtail heads soft and palatable, which is a great thing for first crop afalfa. Owing to the danger of rain in spring, the fact that alfafa could be put up early with lots of salt ought to lessen the danger of loss by rain. The same thing may apply to last cutting alfalfa.

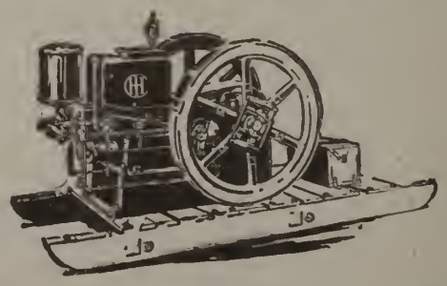
The plan is given without any guarantee of correctness and each person can judge its probable accuracy. It is known that salt will keep alfalfa silage from fermenting too rapidly. Salt sprinkled every four feet in a hay stack will in the sweat apparently distribute itself all through the hay, and the theory of improving the quality of first cutting of alfalfa by putting it up with more moisture than usual and lots of salt looks quite reasonable.

JACKETS FOR MILK CANS.

Jackets of some kind for milk cans in hot weather is a big help in keeping cream cool and sweet, as everybody knows. Recent experiments indicate the extent that warming of milk will be prevented in this way.

Cans of milk cooled to 50 degrees were shipped. They were set in an open wagon and had no covering to shield them from the direct rays of the sun. The milk was hauled thirteen miles, and the average air temperature was 82.65 degrees. The experiment showed that the cans that were hair-quilt jacketed showed a raise of only 5½ degrees in three hours in the temperature of the milk. The cans that were wrapped with wet burlap showed a milk temperature of 58½ degrees in the same period, or a raise of 8½ degrees. The milk in the unjacketed cans rose in three hours to 78½ degrees, or a rise of 28½ degrees. The value of a covering to prevent high temperatures and consequent rapid souring is therefore apparent. Conditions would naturally be much worse on a much warmer day

International Harvester Engines
Two Lines—Mogul and Titan



"WHICH engine shall I buy?" If this question troubles you, a little careful observation and investigation will show that the International Harvester engines are the most satisfactory. No doubt is left in your mind when the advantages of features like the following are clear to you: Extra large intake and exhaust valves, proper distribution of weight, cylinder and piston construction, careful workmanship, prompt repair service, etc.

Ask the men who have used I H C engines. That is the best test. They will tell you of the excellence of IHC construction, simplicity, strength and durability.

Study the engines yourself at the nearest dealer's where International Harvester engines are sold. They are made in all styles, and range in all sizes from 1 to 50-H. P. They operate on low and high grade fuels.

Write for our interesting and instructive catalogues, and when we send them we will tell you where the engines may be seen. A postal will do.

The I H C Line
GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Coltivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Peg, Spring-Tooth, and Disk Harrows
Coltivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

International Harvester Company of America
(INCORPORATED)
Crawford, Neb. Denver, Col. Helena, Mont. Portland, Ore.
San Francisco, Cal. Spokane, Wash. Salt Lake City, Utah

A Flock of Sheep on the Farm

By W. M. Carruthers

Farmers in this State are working under different conditions than did their forefathers—in many instances the soil has been tilled until it is weakened. The agricultural population realizes more fully than ever before the necessity of restoring strength to wornout farms, also of keeping up even those that are the most productive. Farmers do not desire to repeat the past folly of continually raising grain and not returning anything to the soil, but are anxious to learn the best solution of this problem. Land is getting higher and higher in price and not only are owners of deteriorated farms striving to bring theirs up to an average, but those who have the most valuable and richest farms want some means of maintaining this high standard and deriving the necessary profit from a large investment. Therefore, the main purpose of the farmer is to increase the productive power of the soil and to raise upon that land what will make the largest net returns.

As no soil can be continually farmed for grain, it must be changed to clovers and other grasses and then comes the question, "What is it that will give the best results in increasing soil fertility and also the largest profits from grasses, both green and in the form of hay?" The fact that many are learning the correct answer to this question is one reason why the sheep business is increasing generally.

Their droppings are the richest of known natural fertilizers and are well scattered over the pastures. In addition to this, the flock is the greatest of weed destroyers and killing such large quantities of numerous weeds preserves in the soil that plant food which the weeds would have consumed. So the flock adds strength to the soil in two ways, and the good results from their eating nearly every known weed is invariably underestimated.

No other domestic animal will so completely clear the farm, and at the same time sheep use weeds as food. Apart from preserving soil fertility, the total riddance of weeds adds much to the appearance of land. Farmers as a whole have partially learned the value of a flock in this respect and those who are working to preserve their farms are not scoffed at as they were a few years ago. As more attention is given to the soil, the number of flocks will increase.

If sheep consumed as much grain and hay accordingly as other stock, sold for the same market price, and had no wool, flocks would anyway eventually become more numerous on our farms in order to obtain the results just mentioned. But our population must be clothed and their average wealth is such that good clothes will be purchased—that means large demand for wool and it is in evidence according to this year's price of wool. The strong continual demand will always keep it there, too, just the same as wheat, corn, etc., which the millions of people must have. The wool clip will invariably fully pay for the yearly upkeep of the flock, and no other domestic animal has a "side product" that will pay its yearly board bill.

The lamb crop comes in as clear profit and is a large return in comparison with the investment. More mutton is being consumed per capita and the great increase in population has made a noticeable advancement in the demand for mutton.

The price of lambs on the leading markets during recent years has averaged higher than cattle or hogs. Even if prices had been equal, lambs would have been the most profitable owing to low cost of production. It has been demonstrated that from a given amount of feed lambs will make the largest gain, and they are also much easier cared for than other stock.

Many farmers have been born where cattle, hogs and corn were about all they saw, and truly good returns have come from that sort of farming, but it cannot always be continued. Experienced men say that the profits are not nearly so great now as in the past and if it were continued without variation the farms would not be as valuable as they might have been. The necessity of a change is realized and nothing else fills the place like a flock of sheep. Evidence of this comes from the large number of flocks which have been founded during recent years on just such farms.

Years ago the prevalent idea was that sheep were only good for rough, brushy land which could not be plowed. They did give the largest obtainable returns from such land, but now farmers also know that sheep in their place give the largest returns from high-priced land. Those who realize that no land can raise grain for an indefinite period are in a majority of cases putting in a flock of sheep.

The principal cause of less flocks seems to have been because most farmers did not grow up where sheep were kept, so that they have never given any attention to the true value of a flock. As deeper study is given to sheep, the fewer will be the number of farms without them. English farmers have long ago learned that in order to derive the greatest possible profit from a farm, a flock of sheep must be kept upon it.

Competition on the markets has assisted in making the wild variance in prices between "choice" and "common" lambs. Those men who have marketed a few bunches of lambs have had this difference in price deeply stamped upon their minds, and are now striving to produce the sort that will top the market. To bring on this better class of mutton the producer has not only had to feed well, but also improve his methods of breeding. He has purchased a good class of registered rams that have sired a more uniform lot of thick-fleshed lambs than were formerly reared. Mutton producers have learned of the profits to be derived therefrom, and profits are what are worked for.

The demand for such rams has taught pure-bred breeders that it is now the best or none, and the ordinary rams will not sell at any price. Some of America's best pure-bred breeders are also to be congratulated on their efforts to help bring about this condition, because by their sending out none other than strictly first-class sires they have been of great assistance in convincing the mutton producer that the best rams give the greatest net profits.

The market is paying a premium for top lambs in the expansion of breeding pure-bred sheep. The past has given experience to the mutton producer that the use of good sires is profitable, and to the ram breeder that he cannot sell the common class of males. Discrimination on the market against cull lambs makes the producer as a ram buyer discriminate against culls—and it is a good thing. The day of the grade ram is of the past, and the use of low-class registered rams is going rapidly in the same direction—our wish being that it may gain increased rapidity.

The careless breeder of pure-breds must change his ways or suffer loss, the same as the producer of the common sort have been so thoroughly demonstrated that a great change has taken and is taking place. The aim of a vast majority of pure-bred breeders is to produce the very best that is possible. Especially within the last 20 years have importations of select breeding material been made from England, and it has given the breeders a solid foundation to work on and enable us to make much more rapid advancement than would have otherwise been possible. Breeders are producing such excellent specimens of the Shropshire breed that it is none but Great Britain's very tops that will excel ours. This should be a stimulant and a matter of great satisfaction to our breeders, and we believe it is.

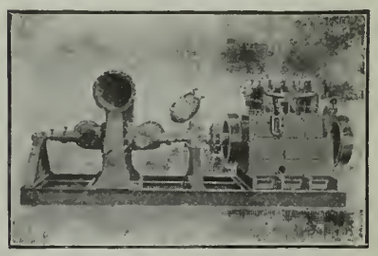
As American land approaches the value of England's, the absolute necessity of soil fertility comes into prominence, and farmers figure for the last dollar that their farms will produce, either directly or indirectly, then sheep will come into their proper place and there will be the right relation between the farm and the flock.

HOLSTEINS DOING WELL.

A. W. Morris & Sons of Woodland a few days ago shipped two fine Holstein heifers and a bull to the Hawaiian Agriculture College at Honolulu. Their cow, Tillie Alcatraz, who is nine months along in a yearly test, bids fair to make a world's record for milk production far above anything accomplished yet. She will make the record with an average of 60 pounds of milk a day from now on, and is making 78. As she has been noted for being a sustained milker, her record is quite sure to be enormous. The fat production for the year is also likely to be well over 900 pounds, equivalent to over 1,100 pounds of butter, which will be the best record yet in the Morris herd. This cow has mostly different blood lines than the other thousand-pound cows in the herd, making it better for the owners than if many of the finest cows were of closely related strains.

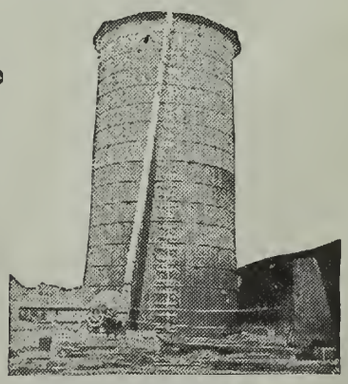
Making life pleasant for others means making life worth while for one's self.

PUMPS
Irrigating Plants
OIL ENGINES
Have Been Manufactured and Installed by
Samson Iron Works
1106 S. Aurora St.,
STOCKTON, CALIF.
for
18 YEARS
OVER 6,000 CUSTOMERS
PRAISE
Samson Engines



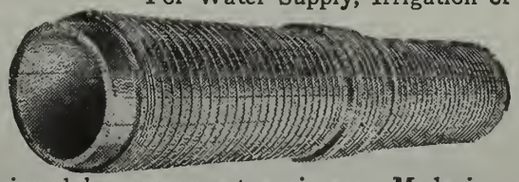
Write for Catalogue O. B.
We have installed the
LARGEST AND SMALLEST
Irrigating Plants
MADE IN CALIFORNIA.

SILOS
All sizes and dimensions made to order for your particular conditions.
This is a Photo of the 20x40 Redwood Stave Silo Manufactured and erected by us on the Sheldon ranch, Kenwood, California.



TANKS
From 500 to 500,000 gallons capacity.

Built to suit All Uses and Users. Cheaper than Metal Tanks, last 10 times as long.
PIPE
Machine Banded or Continuous Stave. For Water Supply, Irrigation or Power.



All Designed by our expert engineers. Made in our own immense factory from clear, air-dried redwood, selected from Air-Dried Stock of 40 Million Feet, which we carry at our plant at ALL times. Write Us for Prices.
Redwood Manufacturers Co.
Fully Paid Capital, $1,000,000.00
813 KOHL BUILDING SAN FRANCISCO

Caring for Our Big Alfalfa Yield

By W. M. Carruthers

The problem now confronting the California farmer is what to do with the surplus alfalfa hay of which most farms have an abundance. The great ranges which have alfalfa farms in connection with the livestock work are really blest more than burdened with a crop which is a drug on the market elsewhere. The stockmen who own these ranges can hold their surplus hay for the next dry year.

California's two last dry years worked great havoc with the livestock interests. Scarcely a range man put up hay enough to feed his stock one month, although the feeding season in California is usually three months. Had our range men provided for these dry years, which are to be expected from time to time in California, such a shortness of stock as now exists in the State would not have occurred.

California is not the only State which has large crops of hay this year. Kansas has the largest crop of hay in its history and the farmers are arranging to hold this hay over for some later season when it will be required. They are building roofs over the stacks which will keep the rain off and in talking with some of these men the writer was informed that these roofs will not cost half as much as the hay they will save. Such a plan might work well in California. Lumber is cheap now and such roofs will last for many years.

The progressive and far-seeing farmer is not going to be a loser in having an over-production of afalfa hay. His foresight that such a crop was coming led him to believe that this alfalfa hay must be cut at the right period to suit the requirements for which he expected to use it. The farmer who has cut and stacked his alfalfa in a haphazard manner may find himself at a great disadvantage when he tries to realize on his hay in the market.

The question of how to dairy has been discussed over and over again by the agricultural colleges and through the agricultural press, the statement being made that no farmer should keep a cow that cannot produce over 200 pounds of butter fat per year. There might be an exception to the rule this year, when alfalfa hay is quoted as low as two dollars per ton in the stack. It is the value of the feeds which are usually produced in California that makes the two-hundred-pound butter cow an unprofitable investment. With cheap hay she can be fed at a profit.

New conditions have arisen within the last month which will no doubt hold the price of butter very high this fall and winter. New free trade conditions which have allowed New Zealand and Australian butter to flood our market here when the price went over 30 cents is wiped out for some time to come. England will require all the surplus butter which her colonies can produce and this country will also be called upon to help feed the warring European countries.

Any kind of a cow should make her owner money as long as the present conditions prevail, provided alfalfa hay has been cut at the proper time to make milk. Where large dairies are run, or small ones for that matter, a great deal of alfalfa hay can be used with the skim-milk to feed hogs. Most large dairies have feed cutters and those that have not can purchase a hand-cutter at small cost. The alfalfa hay should be cut as fine as possible and sprinkled with molasses. This makes a good feed for growing hogs and, together with the skim-milk, will carry them along nicely with very little grain.

Farmers who do not care to dairy and have hay that was allowed to get a little ripe before cutting, can use it very profitably in the feeding of cattle and sheep for the market.

The question has been raised by farmers having this kind of hay, whether cattle and sheep were too high in price to buy and feed for profit. Feeding gives little promise of profit with alfalfa hay selling from ten to twelve dollars in the stack, but when alfalfa is figured as low as two dollars a ton it is a safe investment, even should cattle and sheep drop a dollar a hundred during the feeding. There is no fear of this at the present time, as there is a famine in livestock prevailing all over this country.

It would almost pay the range men of this country to send their calf crop down to the alfalfa farm section and have them fed this cheap hay during the winter. Both the alfalfa growers and the range men would benefit by such a plan. The alfafa man would get double the price for his hay and the range man's calves would be increased both in weight and size above the usual method of winter care.

The same methods might be applied with the sheep men as with the cattle men. Usually in the fall of the year in California there are thousands of sheep shipped on to the market which are really not butchering stock. The live men who have a surplus of hay on hand will look out for such sheep this year and pick them up, give them a hundred days of alfalfa hay, triple the price of the hay and give the people better mutton to eat.

Many ways could be devised to take care of this great hay crop. After the year is over it will be found that the matter of doing this is not so hard as it seemed to look at first. Most every farmer has thought out a plan or method of taking care of his hay crop by this time. The State will be benefited in a great many ways. Better beef and mutton will be put on the market and should such be the case, even if the price did rise, the consumer would not complain.

This great crop of hay will bring a benefit to the State by stopping the slaughter of calves. With such an abundance of cheap feed, calves can be carried through the winter much easier than usual and with a very small percentage of loss. If this alone was the only benefit that the State should derive, surely it would be worth while, as the increase in our flocks and herds would soon be doubled.

Any farm in the alfalfa section of the State would be benefited by not cutting the last crop of hay this year. Should the last cutting be left growing in the field it will be a great benefit to the first cutting next year. This first crop will be ready to cut much earlier, show less fox-tail and therefore be more valuable than usual.

It will pay the farmers to keep stock of all kinds off the alfalfa fields during the winter. This will allow the plants to thicken up and take new life next year. Pasturing alfalfa has a tendency to tramp out the plants and when this is kept up continually each winter the field must be sooner or later plowed up and reseeded. With the abundance of alfalfa hay on hand this year it would be a good plan to keep all stock up and feed this hay rather than let them rustle until everything green is gone from the field.

This year is an opportune time to plow up and reseed the bald spots in the alfalfa field. There is not a farm without these bald spots caused by pasturing or being scalded out with irrigation water in hot weather. Any one experienced in the growing of alfalfa knows how hard it is to get a reseeding on these spots. Plow these spots up and get a good seed bed, being sure that all lumps are pressed down. Seed down with a nurse crop. Sow barley with the alfalfa before the rains come this fall. This barley will be ready to cut next spring when the other part of the field is having its first cutting taken off. The young seeding will then be far enough ahead to stand irrigation and will come right along with the other part of the field.

All irrigating ditches and contours in alfalfa fields should be ceaned out and all breaks fixed this fall before the rains come. This work has usually been left till winter time when much of it is poorly done on account of having too much water in the soil. With such a large crop of hay this year, this work can be done in the fall and the loss of hay will not be felt.

TO SHIP BETTER ORANGES.

The trouble that has been had in early orange districts, those north of the Tehachapi, through the shipment of green oranges and the consequent injury to the markets, has led to the organization of the Mid-California Citrus Association at Porterville, with the object of obtaining high prices by means of a better pack and consequent better reputation. It has been found almost impossible to prevent the shipment of green fruit, so owners of about 400 acres of the finest groves have formed this association, a part of the California Fruit Growers' Exchange, and will pack and ship only fully ripe fruit of fine color and ripeness. To obtain this the association and not the ranch owner will have charge of the picking of all fruit. Membership will be limited to the capacity of the plant, and special care is to be given grading and packing, color being a leading basis for grading. Efficiency first, economy afterward, is the keynote.

A. J. Schultz, formerly horticultural commissioner of Tulare county, is president of the organization, and Mr. Kennedy, who has been manager of the Porterville Citrus Association, will be manager.

FOR SALE

Rambouillet, Shropshire, Oxford and Cotswold Rams

Also a few Pure Bred Shropshire Yearling Ewes.

After August twelfth these can be seen near Soda Springs, Idaho. It will pay you to see our rams before buying. They are the kind you want and prices are right.

KNOLLIN & FINCH,
Soda Springs, Idaho
or
A. J. KNOLLIN,
South Omaha, Nebraska

HOPLAND STOCK FARM

Registered Shorthorns, Shropshire Sheep, Berkshire Hogs, Holstein-Friesian Cattle, Hungarian Ponies, Poultry.
HOPLAND, CAL.

QUALITY
BERKSHIRES

OUR BERKSHIRES ARE NOW BETTER THAN EVER.

They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.

Send for Catalog.

Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

Cream Separator Manufacturers Say

that two-thirds of all complaints about cream separators are due to faulty lubrication. That is because the close-fitting, fast-running mechanism of the separator demands a special oil—and most people use "just any old oil."

Standard Hand Separator Oil

is made especially for cream separators and we know that it is "right" because our lubrication experts have made a study of separator construction and exactly adapted the oil to the requirements. It is just the right body. It doesn't "gum." Dealers everywhere.

Standard Oil Company
(California)

The Clydesdale Horse

By W. M. Carruthers.

The breeders and stockmen of California seem to be very loathe to regard the Clydesdale horse as one of the draft breed. The writer has several times talked this matter over with James McNab, president of the largest draying firm went of Chicago. In his statements he has invariably mentioned that a good proportion of the good horses bred in California which are now being used on the streets of San Francisco have in their veins a trace of Clydesdale blood. In the late 80's and the early 90's Alxander Galbraith shipped to California many high class importd Clydesdales. It is the descendants of these great horses that Mr. McNab says can be found in small numbers all over this western country. When a breeder tells me that he has a horse or two for sale, descended along this line, they are usually the type which the San Francisco drayman is looking for. It seems if the California breeders would listen and try to breed more horses of this kind they could supply the demand here.

One thing the breeders of Clydesdales in Scotland have done—they have developed the walk to a marvelous extent and straightness and trueness of action at the trot which is not surpassed in any other breed. The long, clean swinging stride of the Clydesdale drafter trudging along with the great load behind him is the perfection of locomotion under such circumstances.

Unlike the nations of Continental Europe, Great Britain extends no governmental aid of any kind to her breeders of draft horses. She pays no subsidies and makes no inspections. Every breeder does as he pleases, irrespective of his neighbor. Thus, the Clydesdale horse is the result solely of personal endeavor undirected by any superior power. The uniformity of type which is seen in each of them is little short of marvelous.

In the timber States of Michigan, Wisconsin and Minnesota we find the Clydesdale in great numbers. This can be accounted for in two ways. First: The principal breeders of Clydesdale horses in this country had their farms in northern Illinois, Wisconsin and Minnesota. The second reason is that the Clydesdale is preferred above any other breed of horses on the logging sleighs of our northern States. Several years ago the writer had an interview with the general manager of the Daniel Shaw Lumber Company of Eau Claire, Wisconsin, regarding this matter. Eugene Shaw thought the Percheron horse was more valuable to their company around the mills and in the lumber yards than the Clydesdale. They were docile and easier to handle.

In the woods, during the winter season, when heavy lifts and steady pulls are required to move the great logs to the bank of the river, or on the skidway to be loaded on to cars, the Clydesdale seems to be the choice. When a logging sleigh has been loaded the night before with the thermometer below zero, and in zero weather when the six-horse team is hitched on in the morning, it usually requires a steady pull for one minue to start the load of logs. This is where the Clydesdale shines. He has the weight combined with his great strength and spirit to do this work. It is hard to get other breeds of horses to pull steady for a minute without stopping.

The Clydesdale is easier to train, perhaps, than any other horse and when he is once trained to do his work he rarely ever forgets it. That the Clydesdale is a draft horse of the first water has been proved by the great International Show, which is held in Chicago the first week of December of each year. This show has been in existence now for fourteen years and at seven of them the Clydesdale horse has carried off the prize for the best team of four and six horses in competition with the world.

It has often been remarked that we have no breeders in this country, mostly speculators, but the Clydesdale horse has had breeders in America which have equaled and surpassed our Scotland brothers. At the dispersal sale of Colonel Halloway at Alexis, Ill., several years ago, one of the stallions and two-thirds of the mares were purchased by Scotchmen and shipped across the Atlantic to be used on the stud farms of Scotland.

It is also freely conceded that the American breeders of Clydesdales have succeeded in producing a greater number of champions and prize-winning young things in the free-for-all competitions at our great shows than have the breeders of any other sort. So much so was this at one time that classes had to be made for imported mares alone, for the reason that they had no chance to defeat the home-bred females. American breeders still send into our leading show-yards beautiful arrays of young things, true to type and excellently furnished, but in the market place the Clydesdale gelding holds his own only when classable at the very top. There must be a reason for this peculiar status.

Primarily the American and Scotch trades demand horses of different stamps. For a generation the chief effort of the Scotch breeder appears to have been to improve the length and angle of the pastern and the quality of the bone and hair. To obtain these points they have admittedly sacrificed somewhat the size and weight and ruggedness of their horses. Knowing the preference of the American trade for solid colors they seem to have courted rather than avoiding, continued encroachments of white upon the body color. In short, they seem to have had eyes for little but "feet, pastern and feather." That they have succeeded in obtaining what they wanted in well-night perfect measure can not be denied, but in gaining this they have partially lost the American trader.

We can but note this fact with real regret, because the ideal Clydesdale gelding in point of action and conformation is truly a model and a pattern for the world. The levelness of top, rotundity of barrel, clean bone, well set pastern, prompt, swinging walk with the iron showing at every step, and the sharp trot, with the hocks well flexed and carried close together straight beneath the body, form the combination for which the judge is looking and to which he works.

British breeders, however, owe the interest in the United States some measure of co-operation at least. If they would face about and give us the big brawny clean-legged sort that could be named as heroes of a former day when the Clydesdale was in his glory here, we would gladly pay the price and the benefit to the breed here would quickly become apparent. It never was a numerous breed, and by force of circumstance never can become in Scotland much more numerous that it is just now, but there is limitless room for its expansion on this side of the Atlantic. It will not expand greatly, however, until the Scottish breeders add more top, more neck, more ruggedness generally and eliminate the white.

Since the new co-operative creamery at Madera began operations considerable stimulas has been given dairying in the vicinity.

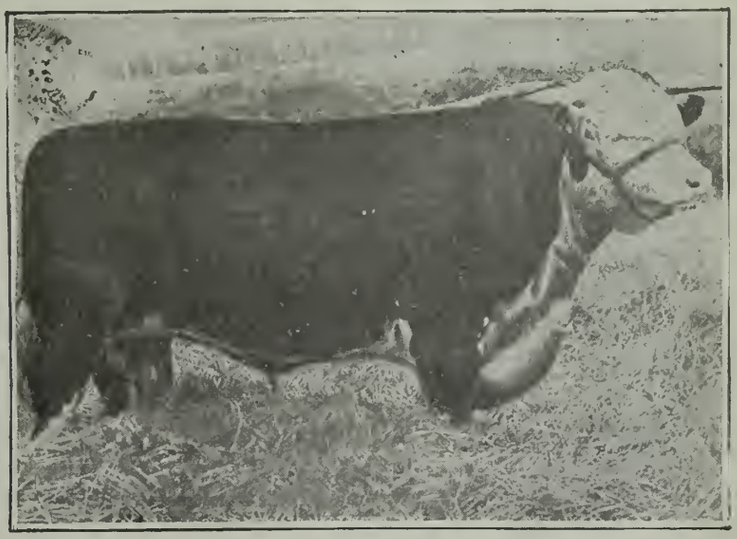
HOLSTEIN REGISTER.

The "Holstein-Friesian Advanced Register Bulletin" is being issued in new and attractive form, being sent out as a booklet rather than a series of unattached leaves of letter size and printed on one side only. In the reports of official records of individual cows, the name of the sire is being given, which is a very valuable feature for pure-bred men who contemplate adding to their herds. In issue No. 1, volume 26, dated July 30, the interesting feature is seen that a number of Eastern cows, making fine records, were bred in California. Most of these were of the Pierce herd, which, after its dispersal, provided cows for very many of the leading Holstein herds all over California. In the bulletin referred to a large number of cows from the herd of M. M. Holdridge, Modesto, are given advanced registry with fine records.

This bulletin tells of an Arizona cow, not under test, reported by Professor Wilson of the University of Arizona as giving from 52 to 58 pounds of milk at a milking, an amazing amount, and 108.3 pounds in one day. She was being milked but twice a day at the time.

Sale Extraordinary HEREFORDS

October 19, 1914, at Harris, Missouri



Repeater VII, Undefeated Grand Champion Bull of America in 1913. Bred and Owned by Harris & Sons, Harris, Mo.

This will be one of the greatest sales of its kind ever held in America. It should make Hereford history. No other herd can boast of five grand champions at its head. Here they are:

BULLS IN SERVICE

Beau Donald 5th----------86142
Repeater ----------289598
Gay Lad 6th ----------316936
Prince Perfection ----------342054
Repeater 7th ----------386905

For Catalog Address

HARRIS & SONS, Harris, Mo.

Ayrshire Bulls

5 head from 8 to 12 months old from imported cows and imported sire. These bulls are well grown and priced right.

For particulars address

E. B. McFARLAND, San Mateo, Cal.

During the State Fair my address will be SACRAMENTO HOTEL, SACRAMENTO, CAL.

HOWARD CATTLE COMPANY

Breeders and Importers of

SHORT-HORN CATTLE

55 New Montgomery Street San Francisco

News From Live Stock Men

S. B. Wright of Santa Rosa has been doing a wholesale business along pure bred livestock lines during the last month. Miller & Lux purchased all his Dorset rams and recently they have contracted for his whole Dorset ewe flock to be shipped to their headquarters at Firebaugh. Mr. Wright also sold to Miller & Lux all the Berkshire boars he had on hand and contracted with them, to be delivered as soon as they were ready, a large per cent of his boar and sow spring crop.

F. Hartje, San Francisco, who owns a fine alfalfa farm up at Lodi, where his son is engaged in the making of cheese, purchased last fall two carloads of good Holstein cows from Wisconsin. These cows have proved so satisfactory that he is having two cars more of them shipped to his farm at Lodi.

F. J. Harrold of Orland, one of the California Agriculture College graduates, called at "Orchard and Farm" office a few days ago and stated that he has now got things running smoothly on his farm. He was married last May and has taken his young bride up to Orland to help him manage his farming and livestock enterprise. Two years ago Mr. Harrold had sixty head of Holstein cows shipped out from Ohio to be used for dairy purposes. These cows were shipped in the middle of winter and when they arrived here they did not do well for the first few months. These cows are now doing above expectation and are giving large yields of milk, having proved a very satisfactory investment. At the head of this herd of cows is a son of King of the Pontiacs and one of the very best young bulls in the State. Mr. Harrold has also branched out in the Poland-China and Duroc Jersey hog business. The University Farm at Davis secured him his Poland-Chinas from Iowa and Professor Thompson of the University Farm told "Orchard and Farm" they were a very well-bred lot.

Miller & Lux recently had shipped to their sheep headquarters at Firebaugh a carload of registered sheep from the East. This car was made up of Hampshires, Dorsets and Tunis. The Tunis were selected from the best flock of this class of sheep in the United States and are to be used along experimental lines by this company. If this should be a success many of this kind of sheep will be used for the production of the milk lamb for the cities on the Pacific Coast. The Dorsets are to be used much along the same lines as the Tunis, but as the Dorset is now far beyond the experimental stage along the lines of producing early lambs, this recent importation should be a valuable addition to the other Dorsets owned by this company. The Hampshires are mostly from imported ewes and imported sires. These imported ewes were shipped by the famous Stevens Bros., Gloustershire, England.

Bruce Cornwall of San Francisco recently purchased a large tract of land near Madison, California. Mr. Cornwall is now at work developing the place to make it a modern stock farm. Registered Hereford cattle of the choicest breeding will be placed on this farm and developed for the California trade. It will be remembered that last December Mr. Cornwall purchased the grand-champion Chester White sow at the Chicago International, also the second-prize boar pig under a year at the same show. Later Mr. Cornwall had shipped to his ranch the grand-champion Chester White sow at the Indiana State Fair. These hogs have done remarkably well since coming to California and the pigs from these champion sows have been finding ready sale in the Pacific Coast markets.

Hopland Stock Farm at Hopland recently shipped thirty head of Shorthorn bulls to Nevada, also twenty head of bulls to J. D. Grant, San Francisco; one to M. A. Briggs, Potter Valley; one to the Northwestern Lumber Company, Willets; one to J. Thomson, Fort Bragg; one to Mr. Linzer, Longvale; one to Phil Bancroft, Fort Bragg, and one for shipment to South America. They also sold a Berkshire boar to E. W. Van Senden, Lodi, and one to the Casper Lumber Company, Fort Bragg, and their two show sows to E. B. McFarland, San Mateo. E. K. Brown, who has had charge of the pure bred interest in the Hopland Stock Farm for the last two years, has fitted a young herd and a calf herd which are going to the State Fair at Sacramento. All the calves are sired by Music Master, the young bull which the Foster Company imported from the East two years ago. These calves will show for themselves what they are made of. Unless the Shorthorn show at Sacramento is far above the standard of previous years these young things will be hard to defeat. They are full of quality, finish and character.

The preliminary classification for the Pacific International Livestock Exposition to be held at the Portland Union Stock Yards, December 7 to 12, 1914, has been issued. Entries close December 1 on everything but carloads. Judging will commence promptly at 9 a. m. Tuesday morning. As is the rule, special attention is to be given to the practical end of the livestock business, and the car lots of finished stock will be the greatest ever held in the West. Much of the recent great livestock progress of the Northwest has been due to the stock yards and to this show.

D. O. Lively, chief of the livestock department of the Panama-Pacific Exposition, is now in the East attending to important matters in connection with the livestock show. He will attend several national meetings of importance and visit some of the principal State fairs before he returns in the middle of September. I. D. Graham, assistant chief of the department, is handling the work at this end.

The advertisement of O. Harris & Sons running in this month's issue of "Orchard and Farm" states that this firm will hold an annual sale on the nineteenth of October at Harris, Mo. The Harris herd of Herefords is the only herd in the United States which can boast of five grand champion herd bulls at its head. "Repeater the 7th," the sensational yearling of last year, who was made a grand champion at every show exhibited, is one of the greatest bulls of all time. It is the purpose of the Harris people to make this the greatest sale they have ever had. Nothing but tops will be listed. Many of the very best cows in the herd will go under the hammer, as well as many of the show things which have made such a sensational record the last few years. This will be an opportune time for Pacific Coast breeders to get Herefords to show at the Panama-Pacific next year. "Repeater" and "Gay Lad" calves will cost more money after this year, as the sons and daughters of these great bulls are proving to be equally as good as their sire. This is a great offering the Harris people are putting up and a rare monument of the class of cattle which are bred at the Model Farm.

FREE

This Handsome 14K

Gold Plated "Bull" Watch Charm

To Every Man Sending 5c for a Sack of "Bull" Durham Tobacco

This Watch Charm is unusually attractive in appearance and design. It is *14K gold plated,* and will prove a decided ornament to any Watch Fob or Watch Chain. We are making this unusual Free Offer in order to induce more smokers to try "rolling their own" fresh, fragrant, hand-made cigarettes from world famous

GENUINE "BULL" DURHAM SMOKING TOBACCO

(Enough for forty hand-made cigarettes in each 5-cent sack)

As many cigarettes are rolled with "Bull" Durham in a year as *all* brands of ready-made cigarettes in this country combined. There is a unique, delightful aroma to "Bull" Durham that is not found in any other tobacco. It is produced by an exclusive process, known only to the makers of "Bull" Durham.

Once you have learned this delicious, distinctive flavor, your taste will always call for it, and you will always recognize "Bull" Durham anywhere by its savory aroma. There is nothing else like it in the world.

Ask for FREE book of "papers" with each 5c sack

FREE Send 5 cents and we will mail you prepaid, anywhere in U. S., a 5-cent sack of "Bull" Durham, a Book of cigarette papers, and this 14K gold plated "Bull" Watch Charm, *Free.* We will also send you an illustrated booklet showing how to "roll your own" cigarettes with "Bull" Durham tobacco. In writing, please mention name and address of your tobacco dealer. Address "Bull" Durham, Durham, N. C. Room 1100

THE AMERICAN TOBACCO COMPANY

YOUR ROOFING AND EXPOSED SHEET METAL WORK will give lasting service and satisfaction if made from

APOLLO BEST BLOOM GALVANIZED SHEETS

Specially adapted for Culverts, Tanks, Silos, Roofing, Siding and all forms of sheet metal work. APOLLO Roofing Products are sold by weight by leading dealers. Write for "Better Buildings" booklet.

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh

Right Ways to Make Silage

Like everything that is very good, silage can go wrong if it is not looked after just right. A number of silos in California, in fact, are not being used on account of their owners overlooking some details on first using and not caring to try a second time. This was truer of the first few silos built than those used now, for with the increasing popularity of the silo as dairymen and stockmen get acquainted with its merits and uses, they are learning to manage it better.

It is probably easier to get good silage than to get other things as good and by observing a few details silage making is very safe. The following are several faults that may develop and the means for overcoming them.

Mouldy silage throughout the whole silo is due to insufficient moisture in the green crop to allow perfect packing.

To prevent this add water to crop as it goes into the silo; or cut crop while it contains sufficient moisture to pack well. Material far too dry for silage if used alone will make excellent silage if wet down well. Adding water when the silo is being filled is very common and is to be advised except when it is certain that the green material contains so much moisture that the addition of more would be undesirable.

Mouldy silage here and there in the center of the silo is caused by putting in the crop unevenly or having it too coarse. The presence of air only at certain places allows the mould to grow there. Thus mould here and there means poor packing and mould all over means that the fodder was put in too dry.

To prevent mould from developing in spots run the fodder through a silage cutter and pack evenly and well in the silo. Put the best man in the silo. Have a swinging chute in it to distribute the cut fodder evenly over the surface. Keep the edges high. Silage of most kinds has to be run through a cutter if it is to pack well and be at its best.

The finer it can be cut the better, within reasonable limits. If it is cut into half or three-quarter-inch lengths, it will pack into the silo much better than when cut in longer lengths, consequently there will not be so many air spaces and the silage will not heat up so much. Probably silage would pack in a little bit firmer if it was cut in quarter-inch lengths, but in half-inch lengths it is as short as necessary and further cutting would mean delay and expense. Some people cut it three-fourths of an inch or an inch. This is generally coarser than it ought to be, but when it is cut in half-inch lengths it packs very nicely.

Silage could be packed to prevent mould when longer than advised and the reason for suggesting half-inch lengths is more to improve quality than to avoid mould. When the material it too long, however, it is going to be extremely hard to pack and mould is likely to develop.

Mouldy silage, by the way, will kill horses pretty easily and if any mould develops, horses should not be allowed access to the silage.

Mouldy silage around edges may be caused by the admission of air through the silo wall or along the wall from the top.

Pack well around edges as suggested before. Make the silo wall air tight by drawing up the hoops in the case of a stave silo; by putting tar paper between the two layers of boards in case of the common resaw type of silo; and by plastering the inside of the wall with a mortar of cement and water in the case of concrete or cement plastered silos. Tight walls are essential. Papers put over the cracks in walls will also do much to prevent leakage of air.

Sour silage shows the presence of too much acid. This is brought about when the sugar content of the feed is very high. This is not likely to occur under our conditions and with our usual silage materials. It is very likely to develop with sweet sorghum

Use material containing less sugar, or when the material is very sweet, mix in alfalfa or some such material which will bring the sugar content of the whole down to a moderate amount and excellent success can be obtained.

Silage from alfalfa or the other legumes is often rather below standard on account of lack of sugar and generally high protein content. Sweet sorghum or sweet corn, or some such material containing plenty sugar would bring the quality of the alfalfa silage up as much as alfalfa would improve silage from sweet sorghum. When one has too little corn to fill a silo, by mixing green alfalfa well with it in filling, all that the silo can hold can be made. Alfalfa alone makes very good silage, though extremely strong smelling. By using a great deal of salt with green alfalfa too rapid fermentation can often be prevented.

Silage made from crops that are not mature becomes more or less sloppy and does not make good feed.

If the crop is allowed to mature well before harvesting, this trouble will not occur.

The leading points to be observed are to see that the crop is put in with sufficient moisture, though not so green as to be sloppy. Have it at a good stage of maturity. Cut it well, pack it tight, and prevent leaks.

THE MILLER & LUX HAMPSHIRE PURCHASE.

The purchase of Mrs. John Milton's flock of Hampshires by the Miller & Lux Company of California puts this firm in possession of one of the very best flocks of Hampshires in the country. It is unnecessary for us to tell our readers what kind of stock the late John Milton used to handle, but we might say that no better material came to this country than John Milton brought over while he was importing and showing Hampshires. His winnings in the keenest competition was ample proof of that. Anyone who knows anything about Hampshires knows that John Milton was one of the best Hampshire judges of his time, and a better shepherdess than Mrs. Milton never lived. It was Mrs. Milton who fed and cared for the home bred stock of the Milton flock when her husband was away in England and better conditioned stock than that fitted by her and showed by John would be hard to find.. We will remember what John Milton once told us. He said: "My wife is a better feeder than I ever was or ever expect to be. She feeds by the clock and never allowed her sheep to bleat for their food, and you know they will do that if they are neglected ten minutes after feeding time."

Miller & Lux are to be complimented on the purchase of this splendid flock. The ewes were all imported last year and the lambs are all by rams from England's great breeders.—THE SHEPHERD'S JOURNAL.

FLY COMFORT FOR BULL.

I have a simple device for the comfort of a bull in fly time which may be of interest to others. Place two or three boards or poles across the stall high enough so the bull cannot reach them with his head. Rip bran sacks into strips and hang over poles, fastening with fence staples. The bull soon learns to step forward and back to brush off the flies.—L. E. B., in Hoards Dairyman.

The grain that goes into the strawpile fattens the crows.

ATTENTION!
HOMESEEKERS AND INVESTORS

INVESTIGATE
The Opportunities for the Homeseeker and Business Man in the New Territory Along the

WESTERN PACIFIC RAILWAY

—IN—

CALIFORNIA, NEVADA, UTAH

1,500,000
ACRES OF GOOD
IMPROVED AND UNIMPROVED LANDS
AWAITING SETTLEMENT

WRITE FOR A FREE COPY OF OUR
"HOMESEEKERS" and "OPPORTUNITIES"
LISTING AND EXPLICITLY
DESCRIBING OPPORTUNITIES IN
THIS NEW COUNTRY

WESTERN PACIFIC RY.

BODE K. SMITH
ASS'T. GENERAL PASSENGER AGENT.
MILLS BUILDING SAN FRANCISCO

California
AND PACIFIC COAST
Nature's Exposition
AND ALL-THE-YEAR VACATION GROUND

Yosemite National Park
Mariposa Big Tree Grove
Shasta Resorts
Del Monte and Monterey Bay Points
Paso Robles, Santa Barbara and Coast Country
Los Angeles and its Beaches
Pasadena, Riverside and Redlands
Byron, Paraiso and Gilroy Hot Springs
San Joaquin and Santa Clara Valleys
Lake County Resorts and Springs
Lake Tahoe Region
Klamath and Crater Lakes
Kings and Kern River Canyons
Santa Cruz Mountains and Big Trees
Sacramento Valley
San Francisco, Oakland and Bay Region
Portland, Tacoma and Seattle

For Fares, Train Service and Descriptive Booklets Ask Agents

Southern Pacific
THE EXPOSITION LINE—1915—FIRST IN SAFETY

What Makes Dairy Conformation?

A good dairyman knows by the shape of a cow what probability there is of her being a fine producing animal, but yet very little has been done to find out accurately just how much importance should be given to this point or that point; say length of udder, width of escutcheon, length of milk veins, etc. Clearly it would be of great help to have some good rule to follow along those points, as it would give an ideal in type to breed for, be a help in selecting animals, and a help in other ways.

The only way to determine these points is to select large numbers of dairy cows of the different breeds and of varying producing capacity and to measure all of the parts which supposedly could be guides to milking capacity, then to compare the measurements of good and poor producers. This was done with 45 cows, classified as heavy producers, medium producers and light producers, and the results reported by V. F. Dolcini, instructor in Animal Husbandry at the University Farm School in the University of California Journal of Agriculture.

The following table will show the points considered. The measurements are in centimeters, a centimeter being approximately two-fifths of an inch. Although the cows classed as light producers averaged much more than the average cow on the average California dairy, and would be considered excellent animals, it can be seen that they are inferior in practically every point considered to the so-called medium producers, and they in turn, to the heavy producers. The results, therefore, although they were derived from comparatively little investigation, indicate quite clearly to what points a dairyman should pay most attention. As can be seen in the table the investigation extended even to the matter of the cost of producing the butter fat, and it is money that talks.

	Heavy Producers.	Medium Producers.	Light Producers.
Average fat production, lbs.	442.08	348.7	278.78
Average milk production, lbs.	9,787.4	8,509.9	5,369.8
Average cost of feed	$77.15	$71.29	$58.93
Average cost per lb. of butter fat	$ .179	$ .204	$ .211
Average circumference of barrel	229.8	221.25	216.9
Average length of body	89.64	89.4	87.3
Average depth of body	70.82	69.4	67.0
Average width on floor of chest	35.1	33.9	33.6
Average width through heart	42.92	41.4	40.0
Average width between hooks	52.6	52.5	51.5
Average width between thurls	44.4	44.2	41.2
Average width between pins	22.9	23.8	21.9
Average length from hooks to pins	52.0	51.22	51.6
Average width between last ribs	3.47	3.24	3.22
Average length from hooks to last rib	33.3	32.9	31.7
Average width of escutcheon	11.8	11.8	11.6
Average thickness of thighs	12.3	12.7	13.4
Average length of udder	38.4	36.0	36.2
Average depth of fore udder	25.3	23.8	23.9
Average depth of rear udder	34.2	32.8	32.7
Average length of veins	49.72	46.1	45.1
Average diameter of veins	2.38	2.19	1.95
Average number of wells	4.73	4.31	3.73
Average diameter of wells	1.12	1.03	1.06

In the following Prof. Dolcini describes the methods used in this investigation, and what he considers the investigation shows:

Methods Used.

The measurements were all taken accurately and all were taken under the same conditions so that each cow would get her just dues. For example, the circumference of barrel was taken in the middle of the afternoon after the cows had eaten their hay and before they received their evening drink. This measurement was taken by means of a tape which was passed around the barrel, going over the navel below and over the last floating rib above. In taking the measurement at this place, the period of pregnancy had nothing to do with the size of barrel.

The rest of the body measurements were taken with the cow standing in a normal position on a cement floor. The length of body refers to the distance between the central part of the scapula and the hook bone. These different measurements were taken either with wooden calipers or a tape, with the exception of the size of veins and the size of wells, where a small metal caliper was used. Practically all measurements were taken from outside to outside as in the case of width of hooks, pin bones, etc.

After getting all of the foregoing data, we took the fat records of the different individuals and classed them as high, medium and low producers, putting an equal number in each class. The cattle consisted of individuals from the different dairy breeds. A table was worked for each breed separately, then they were put together and the same thing worked out for all breeds combined.

We also figured the cost of keeping these cows through the year in which they made their records and determined the cost of and relation between the different classes in producing a pound of butter fat.

Important Points.

In taking up this work, we found many interesting points which showed a perfect correlation, while other minor points did not show much of a correlation. The correlation table speaks for itself and there is little to be said concerning the results. However, it may be well to mention some of the main points.

To begin with, the circumference of barrel showed a positive correlation in all cases. The length of body was positive, the chest measurements which indicate constitution were also positive. However, it is possible for a cow with a narrow chest or lack of constitution to make one good yearly record and then break down and not produce highly again, as was the case with one of the animals worked on. It is a well known fact that a cow must have good depth of chest and good width to make good yearly records year after year.

Practically all of the points under mammary system showed a positive correlation, although there are some exceptions to this. The exceptions are probably due to the fact that we did not have a large enough number of cows to work on, rather than to the fact that these are not essential points.

Minor Features.

Two of the points that did not seem to be of very much importance were thickness of thighs and width of escutcheon. These points seemed to go hand in hand and vary accordingly, while the correlation was positive yet we believe that the breeds influence it a great deal. All score cards ask that the thighs be hollowed out on the inside that they may be full on the outside and cause the thigh to be thick. Such is generally the case with the Ayrshire and Holstein. There seems to be a positive correlation between a thick thigh and a wide escutcheon, so we do not believe the escutcheon has a great deal to do with production, yet we do believe that all good cows have good escutcheons and one with hardly any escutcheon to speak of would not be a good producer. These two points, however, were the only two that did

NASH BROS.
TIPTON, INDIANA
BREEDERS OF DORSET SHEEP

BREEDER OF CHEVIOT SHEEP
GEORGE PARNELL WINGATE, INDIANA

BREEDERS OF
HAMPSHIRE AND SOUTHDOWN SHEEP
CHAS. LEET & SON
MANTUA, OHIO

For Sale
Shropshire, Rambouillet and Cotswold-Rambouillet Rams.
1,200 Head
These rams are splendid types of their respective breeds. Their sires are imported rams from the best flocks in England, Canada and United States. They are priced right in any quantity to suit purchasers.
For particulars address
D. C. Wheeler, Inc., Reno, Nevada

Dates of Prominent Agricultural Fairs and Shows for Fall and Winter 1914

For the benefit of readers of Orchard and Farm, we herewith give the dates of all prominent fairs and shows in Western United States for the remainder of 1914:

Sept. 8th-Sept. 10th—Yolo County Fair, Woodland, Cal.
Sept. 12th-Sept. 19th—California State Fair, Sacramento, Cal.
Sept. 12th-Sept. 20th—Spokane Interstate Fair, Spokane, Wash.
Sept. 21st-Sept. 26th—Montana State Fair, Helena, Mont.
Sept. 28th-Oct. 3d—Oregon State Fair, Salem, Ore.
Sept. 29th-Oct. 2d—Wyoming State Fair, Douglas, Wyo.
Sept. 29th-Oct. 3d—Fresno County Fair, Fresno, Cal.
Oct. 5th-Oct. 10th—Utah State Fair, Salt Lake City, Utah.
Oct. 5th-Oct. 10th—Kings County Fair, Hanford, Cal.
Oct. 14th-Oct. 17th—California Dairy Show, Modesto, Cal.
Oct. 22d-Oct. 31st—National Dairy Show, Chicago, Ill.
Nov. 9th-Nov. 14th—Arizona State Fair, Phoenix, Ariz.
Nov. 28th-Dec. 5th—International Live Stock Exp., Chicago, Ill.
Dec. 7th-Dec. 12th—Pacific International Live Stock Exp., North Portland, Ore.

For further particulars address the secretary of any of the above meetings at the address given.

not seem of so very much importance.

In connection with the udder measurements, we noticed the balance and texture of udder. While an udder should be fairly well balanced, we do not believe it should be level on the sole and ideal in shape as the score cards call for it. There is a great tendency, and, in fact, it is most generally the case, that where we have a perfectly balanced udder which is level on the sole, we have a meaty udder. The udder must be meaty to hold its shape when not distended with milk and we have found from our correlation table that the cows with the meaty udders are not the highest producers. On the other hand, the highest producers all have udders of good texture which milk down to practically nothing. This shows that the level sole, perfectly balanced udder is not inducive to the highest production because of the meatiness which accompanies it. However, the udder should be well shaped when distended with milk. The texture of the udder was also noticed and there was a positive correlation here. The highest producing cows all had udders of good texture, while the poor producers had udders of poor texture and in the most cases were coarse and meaty. An udder of good texture is absolutely essential for a good producer, as was shown by the data gathered.

Rump Important.

The size of nostril was also noted and the size varied directly with the production in most cases. The angle of rump also varied with the production, the high producers having level rumps, while the low producers varied from slightly drooping to very drooping rumps. In fact, all of the cows in the low producing class dropped considerably in the rumps, while with the high producing class the rumps were long and level.

Some people may have fault to find with this work, but the following table states facts and everyone can draw their own conclusions. Some men argue that the large cows have all of the advantage and that each breed should be worked up separately. Each breed was worked up separately and the same results were obtained. As far as the size of the cow is concerned, the large cows are the best producers, providing all other things are equal, but we had many large cows in the medium and low producing classes as well as in the high producing class.

Summary.

We concluded from the work that, first, there is a positive correlation in most cases between the different points of conformation and production. Even though the table did not show a positive correlation in every case, yet we believe that these points are essential, since all of the high producing cows had them in their favor. Second, there is a positive correlation between all points of the mammary system and production. The cow must have the proper kind of an udder, long tortuous veins and a large number of wells to be of the highest producers. The cow needs to have capacity in the udder as well as in other points to be a high producer. Third, the most important points to consider are, circumference of barrel, good width and depth of chest, open frame work, as shown by width between ribs and rump conformation. Fourth, a pound of butter fat can be produced much more cheaply in a high producing animal than in a low producing one.

ALFALFA FOR BEEF MAKING.

The dairy cow will eat so much alfalfa and no more and one of the greatest hopes for disposing of part of the surplus, when there is a surplus, is in feeding steers. An experiment in what may be done on an alfalfa ranch, not usually used for stock feeding, is being made on the alfalfa ranch of George C. Roeding, the nurseryman, near Sanger, Fresno county.

A bunch of 90 head of yearling steers, or younger, was recently purchased in Arizona, part of them dairy steers having much Holstein, Durham and miscellaneous blood, part range steers. These cost about $30 apiece.

They are fed in a three-acre lot on green alfalfa, fed in racks. This saves much alfalfa that would be wasted on pasture. The cost is small, for the mower is going all the time and it is as cheap to take the fresh alfalfa from behind the mower and put it into the racks as to make alfalfa hay and put it in the stack. Labor costs can thus practically be ignored and the alfalfa the stock eats compared with alfalfa in the stack in figuring returns.

These steers will eat more alfalfa as they grow, each consuming in a year's feeding, alfalfa to make five tons of hay, or thereabouts. The latter part of the feeding to harden up the flesh will have to be hay, or something else than green alfalfa, which does not affect costs to amount to anything.

Returns will depend upon the market price. The steers should weigh at the end of a year's good feeding 1,000 pounds. At 7 cents, this would be $70 per head, at 6½ cents, $65 per head. It ought certainly to be that good at least, which would leave a margin of $35 to pay for feed and care. This is $7 per ton for the alfalfa hay in the stack, or cutting off $5 per head for risk, rent of feed lot, extra care, etc., it would leave $6 per ton for the hay. The calculation is fair enough considering the fact that the labor of feeding is offset by the labor saved in hay making. There is also the manure, which is worth quite a bit, even though it is scattered over a three-acre field.

This figuring is not all theoretical, as costs of feeding, feed consumed, gains, etc., are known fairly well by experiences outside of California and in, though such work has hardly been tried here merely as a method of disposing of alfalfa hay in times of surplus.

Results, by whoever secured, should be worth watching. Alfalfa hay at $6 per ton is not bad in bumper years, and much better than $2.50 to $3 per ton in the stack. Dairymen could raise a year old steer for $30, if they were fixed for it, and a steer of the right blood, even of dairy stock, would be worth having to make a market for alfalfa hay that otherwise would not be eaten, though of little value perhaps, with alfalfa at its normally excellent price. By getting in outside steers and raising dairy calves for years of plenty, provided they were of a kind to put on flesh, alfalfa ought to be worth $5 to $6 per ton loose every year and much more when the supply was only normal.

STIR MILK IN COOLING.

Experiments by the dairy division of the United States Department of Agriculture show that milk in cans put in cold water to cool cools much more rapidly if stirred than if untouched. This is especially true of the part of the milk above the level of the water, as it keeps its temperature while that below water level is cooling. Milk in cans placed in running well water cooled from 90 degress to 60 degree in three hours when stirred every 15 minutes, while the unstirred took 4 hours and 15 minutes to reach the same temperature. When the milk is placed in cans and set merely in cold water, or even in a tank filled with ice water, the cooling goes on very slowly, especially if the cans are large.

Crops in the United States fell below their ten-year average slightly for August 1, according to the U. S. Department of Agriculture, prospects being a little less bright than in the previous month.

50 Cows Average 717 Pounds Butter

This is the average of the 50 cows that have completed yearly semi-official tests to date in our herd.

Did you ever consider what it would mean to place a young bull in your herd, bred in lines that are producing these results? It will mean increased production and value for every animal in the herd. He will produce the kind of stock that are in the greatest demand at high prices.

INDIVIDUALITY, PRODUCTION and TRANSMITTING ABILITY are essential in the choice of a herd bull. These are the qualifications of the young bulls that we offer as low as $150.00.

Engage your calf for use next fall. Your inquiries will be given prompt attention.

A. W. MORRIS & SONS CORPORATION
Holstein Friesian Cattle — Woodland, California

HALLWOOD FARMS
Breeder and Importer of
SHORTHORN CATTLE
Address E. M. HALL, Carthage, Missouri.

GEORGE D. HARRAH
NEWTON, IOWA
BREEDER OF
HEREFORD AND SHORTHORN CATTLE

FOR SALE
HOLSTEIN-FRIESIAN BULLS
Five registered bulls and 4 registered bull calves.
These calves are from Eastern A. R. O. grand dams and have for sire King Seges, 2d, one of the best young bulls in the State of New York. —AND—
1,000 Unrecorded Pure Bred Shropshire Ewes and Rams.
These sheep are large and in fine condition. Can be seen near Firebough. Prices on application.
MILLER & LUX, INC. Merchants Exchange Bldg. San Francisco

Sugar Valley Shropshires
Are Not SURPASSED for QUALITY by Any FLOCK in AMERICA
I ALWAYS HAVE ON HAND choice flock headers, breeding ewes and choice show stock that cannot be surpassed in quality at the prices I ask. In my flock runs the Best Blood of the Best English Flocks. IF YOU ONCE BUY OF ME YOU WILL ALWAYS BUY. Come and see my flock; it will please you. My farm is easy to reach from Chicago. If you want first-class Shropshire Sheep write me before buying at extravagant prices.
I won Champion Ram, First on Pen of Ewe Lambs and First on Flock at the last International Show with stock of my own breeding.
L. KAMMERER, Proprietor, BRODHEAD, WIS.

WILL BUY BEST STOCK
I make frequent trips East, visiting the best live stock breeders to secure pure bred live stock of the best quality and of all kinds and breeds for customers. Some of the finest show stock in California has been selected by me, also a great amount of fine breeding stock owned by some of the most experienced and successful stockmen of California, Hawaii and Western Spanish America. Correspondence invited. Address
W. M. Carruthers, 721 Hearst Building San Francisco

THERE ARE BARGAINS WORTH WHILE CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD READ THEM FOR PROFIT

Treating Roup and Chicken Pox

I have about one hundred young turkeys and until lately they have been doing finely. Now some of them have small wart-like bunches come on their heads near the eyes and bill. They become quite large in a few days. They also have canker in their mouths. What is the trouble and remedy? Their living quarters are perfectly clean, everything being whitewashed inside and out.—A. M. P., Butte City, Cal.

Answer by Professor J. E. Dougherty, University Farm.

From the description given it is evident that your turkeys are suffering from chicken pox and roup. The wart-like swellings on the head about the bill and eyes are the result of chicken pox, and the canker in the mouth, together with the catarrhal secretions from the nostrils, are roupy symptoms.

The best treatment of roup is prevention. The disease can be prevented by stopping all sources of infection. Some things to keep in mind are:

1. In introducing new birds always procure them from uninfected flocks.
2. Isolate all new birds and all birds that have been exhibited at shows for two or three weeks, to make sure they do not develop the disease.
3. Exclude from uninfected house and yards poultry and all other animals, including men, coming from those that are infected.
4. Do not use implements, as hoes, shovels, etc., that have been used on infected premises.
5. Keep the birds in a good hygienic condition, well nourished and in dry, well-ventilated houses and roomy yards.

When the disease has been introduced into the flock, careful precaution may prevent its spread.

1. Immediately separate from the flock any bird that shows symptoms of the disease.
2. Disinfect the yards and house. A five per cent solution of carbolic acid may be used on the yards. Remove the litter from the house and disinfect freely with a good coal tar spray.
3. Use potassium permanganate in all drinking water.
4. Keep watch of the flock, so that any new cases may be isolated at once.
5. Burn or bury deep all birds that die.

The disease is amenable to treatment, but this treatment must be individual and requires a great deal of time. It must be continued once or twice a day for quite a long time. It is, therefore, very expensive and consequently impracticable for ordinary stock. Moreover, birds apparently cured are likely to become the source of infection for later outbreaks. If the stock is only of ordinary value and the outbreak not serious, it is better to kill all birds that develop the disease.

Roup may be cured by remedies, if the treatment is careful and judicious. Obstinately reappearing false membranes in the mouth can be successfully treated by burning the diseased tissue with a strong acid (hydrochloric acid, 50 per cent to 75 per cent) or other caustic, such as silver nitrate. A lunar caustic pencil is excellent for cauterizing these false membranes.

Another method of treatment which gives excellent results, especially in the early stages of roup, is the use of 1 to 2 per cent solution of cresol disinfectant or other coal tar spray. Fowls are treated in the following manner: The nostrils are pressed together in the direction of the beak two or three times. Pressure should also be applied between nostrils and eyes in an upward direction. This massage helps to loosen the discharge in the nostrils and eyes. The bird's head is then plunged into the above solution for twenty or thirty seconds, in fact, the head may be kept under the solution as long as the bird can tolerate it. The solution is thus distributed through the nostrils and other canals, and has an astringent and slight disinfecting action. This treatment should be given once or twice a day until all symptoms have disappeared.

If there are solid tumors in the eyelids, they should be opened so that the skin may bleed freely. The cheesy matter should be removed and the surrounding membrane touched with a 5 per cent carbolic acid or silver nitrate solution or a silver nitrate pencil, and then a cotton plug put in again to prevent the cavity from healing too quickly. We have cured chickens in this way in about a fortnight.

As all of these methods of treatment demand a good deal of time and care, they cannot well be employed for whole flocks, but the more valuable fowls may be treated in this manner. Farmers and poultrymen should first try the head-dipping method of treatment, as it is the easiest to employ.

For chicken pox, dip the fowls' heads as above prescribed. Then, after thoroughly disinfecting the hands, remove the scabs wherever found on the head and face with the finger nail and cauterize each raw surface thus exposed with a silver nitrate pencil or a drop of pure cresol disinfectant (use a feather for the cresol spray). The scabs close to the eyes may be removed and the wounds washed with boracic acid and then dusted with iodoform. This powder will not hurt the eyes. Repeat once or twice daily until cured.

WHERE HENS PREFER TO LAY.

A poultryman made an experiment with his fowls to ascertain their preference for a place in which to lay and found that more hens chose to lay in an open box in a corner not far from a window and three feet from the ground than in anything darker, higher, lower or differently constructed. One hen out of forty-one left all the boxes and stole her nest in a thicket; another selected a barrel on its side at the back of the house. The rest went for the greater part into corner boxes or corners of the chicken house without boxes.

He says: "I think the explanation of this corner idea is simple: The wild hen, like the grouse, naturally seeks a spot where she cannot be surprised from the rear, and the habit sticks to her descendants no matter how civilized. Anything she can go into and then face round with an assurance of safety on all sides except in front seems desirable to her. Going still farther into natural functions, the hen evidently wishes to be able to leave her nest with a dash for the open over the head of a formidable assailant if necessary, thereby tempting it to give chase and drawing it away from the eggs.

"So the nest should be at least a three-sided affair, and having a top is no disadvantage. The entrance should be in front. I deny the value of making a rear dark alleyway to the nests, as is often planned, for this means added labor, expense and trouble, since another opening in front is necessary for human access to the nest."—Exchange.

Don't feed too heavily on very hot days. Where food is kept before the birds in feeders and hoppers they are not apt to overfeed, but when hand fed the feeding can be overdone. Three meals a day are enough for hot weather chicks from the first feed to roosting age.

Don't feed cut green bone to growing chickens.

A full feed once or twice a week of scalded fresh fish will help growth and condition wonderfully.

Some Facts About Milch Goats

To "ORCHARD AND FARM"—As the writer wishes milch goats to have all the credit that they are entitled to, it was thought best to call your attention to a statement on page 14 of your July issue.

You state that good does can be purchased for $12 to $20, and if you had stated from $20 up to several times that much it would have been much nearer right. Then you state that pure bred bucks can be had for about $25. That is a very ordinary price for fair to good pure bred kids when a few days old. At four to five months old (at weaning time) the price is from $40 to much more. Then a year or two older, from $50 to $100 and much more, depending on how near perfect specimens of the various breeds they are and on their breeding.

Swiss Toggenburgs and Saanens are referred to, as they are taking the lead in the United States.

Then you claim that goats' milk is only considered superior to that of cows for infants. Now, if it is only considered superior for infants, why do so many physicians prescribe goats' milk when everything else they know has been tried and none agree with the patient, and why do the infants in nearly all cases at once begin to thrive on it and continue to do so as long as it is used in a right way?

Fourth, you state that the flavor of goats' milk might be considered a disadvantage. Now, no one can tell the difference in the taste of milk from an average properly fed and well managed milch goat from that of an average cow also managed as she should be. The writer has made a great many tests and knows that to be a fact, although admitting that there is some difference in the taste, and also in the amount of butter fat in milk from various goats, and there is also in that from various cows.

I must also add that goats' milk can be used freely by many persons of various ages who cannot use cows' milk at all.

Mr. Editor, I hope you will forgive me for writing, but really your article is very misleading to persons who know little about milch goats.—GEO. LANGLOIS, Sebastopol, Cal.

We fancy that the average reader will find that the statements made in the July issue will correspond much more closely with those given above than you believe. The information you give will at least clear up any misapprehension that might have arisen. Our estimates of prices, which were stated to be merely estimates, very naturally applied to the lowest figures for which a person could hope to get an animal that would be serviceable for ordinary work. Similarly, if a man from Denmark would write asking the price of cows in California, we would quote ordinary grade prices, and he would know that if he wanted high-class animals he would have to pay very much more. The prices were named only as estimates and your accurate and explicit information is welcomed.

We surely would have been wrong if we had stated that goats' milk was not considered valuable for invalids and infants, and guess that leaving the word "considered" in will not prevent people from knowing that physicians highly recommend it.

People are queer sticks in the way of eating and drinking, and a slight difference in flavor of food from what people are accustomed to frequently spoils a person's appetite for a dish. There is no doubt but that quite a few people do not like goats' milk because they notice a difference between it and cows' milk, but that, as we stated, was a matter of individual judgment. If, as we infer from your letter, there is a difference in flavor of goats' milk on account of care and feeding, so that some cannot be distinguished from cows' milk (and yet would have the advantages of goats' milk for infants and others) we know that an article by you on the matter would interest many people. Owing to the rapid progress of milch goat raising and its coming importance any other information that you can ever give us will be more than welcome.

Facts About Egg Formation

For some time the pathological department at the Missouri Experiment Station, as reported by T. E. Quinsenberry in the American Poultry Journal, has been observing abnormal eggs and facts as to their cause, significance, etc.

Thirty-six abnormally small eggs were recently examined.

Twenty-five contained yolk or some part of yolk.

Five contained blood clots.

Three contained particles of chalazea.

One contained a hard lump of albumen.

One a normal yolk.

One contained a ruptured yolk and no albumen.

The small eggs were laid in the regular course of laying, the greater number of the hens laying the day before and the day after, two laying the same day.

The common idea is that when a hen lays an abnormally small egg that the hen has laid her clutch and is going broody or else it was the first egg laid by a pullet. This idea is incorrect, for as a rule the hens which lay small eggs lay regularly both before and after laying the small eggs. The facts are that any object getting into the funnel of the oviduct will stimulate the oviduct action so that it is moved down the oviduct, causing the albumen and shell to be placed around it.

In certain yards at this experiment station, on April 28, 1914, 1,068 eggs were laid. On the night of April 28 there were 27 soft-shelled eggs laid, or an average of about one egg to 40 hens in these same pens. Of the 18 hens which we know positively laid soft-shelled eggs, 12 of them laid on that date, the day before and the day after, showing that the soft-shelled egg is laid in the regular course of laying, between hard-shelled eggs.

With regard to the soft-shelled eggs, there are many theories advanced, such as the lack of egg shell forming material, over-exertion on the part of the hen or of her egg organs, inflammation of oviduct, etc. The tests made here indicate that a lack of shell-forming material, such as shell, grit, etc., is not always the cause of soft-shelled eggs. They may have imperfect shells, but a lack of material will not produce a soft-shelled egg one day and a hard-shelled egg the day before and the day after.

It is interesting to note that principally during the day is nature's time for the movement of the egg through the oviduct, and at night the egg rests and receives the shell in the shell-forming section. For this reason, the soft-shelled eggs are laid in the fore part of the night and the harder-shelled ones later in the night.

The records of the 24 double-yolk eggs were kept. Six of the hens did not lay the day before, but laid the day after; eight of the hens laid the day before, but did not lay the day

after; nine of the hens laid the day before and the day after; one hen laid only one egg during the month. Some of the double yolks were contained in one chalazea, while some of them were in separate chalazea.

In eight large eggs containing two yolks which were examined, six eggs contained yolks which were the same size. In two, one yolk was smaller than the other. In three, the yolks were in the same chalazea.

One of the largest hens in the egg-laying contest is a Plymouth Rock and weighs 8½ pounds and has laid 12 eggs, or not quite 1½ eggs to every pounds of her body weight. One of the smallest hens in the contest is a Campine and weighs 1½ pounds and has laid 103 eggs, or nearly 70 eggs to every pound of her body weight.

The perfect bird in any variety or breed is very hard to find. Occasionally we find some very fine specimens, but when we go over the birds from head to toe we are sure to find that something is not just as it should be.

THE ECONOMY OF SKIMMILK.

Most farmers have a very clear idea that in calf raising there is nothing like good, sweet skimmilk. There are three ways of using milk with calves: First, feeding whole milk; second, feeding with skimmilk; third, letting the calf run with cow. The Kansas Experiment Station conducted an experiment in all three of these methods and here is a short table that tells at a glance what the facts were that they found in all three. Three lots of ten each were fed 154 days. The skimmilk lot received grain enough daily to replace the fat taken from the milk. Here is the table that tells the story:

Method of feeding.	Average gain per head. Lbs.	Daily gain per head. Lbs.	Cost per 100 lbs. of gain.
Skimmilk	223	1.51	$2.26
Whole milk	287	1.86	7.06
Running with dams	238	1.77	4 41

The final cost of the gain shows that the greater economy lies with the skimmilk.—Hoard's Dairyman.

ADVANTAGES OF THE HOG.

In spite of the fact that pork production in California is far behind its possibilities, the hog has a number of advantages over other kinds of farm animals, as a writer in the Colorado Agricultural College points out.

Aside from cholera hogs are less subject to disease, reproduce faster, and make better gains per pound of feed consumed than do most other farm animals. The annual increase of horses, cattle and sheep ranges from 50 to 100 per cent. The increase of hogs should be from 500 to 1,500 per cent. The sow has the advantage in bringing forth two litters a year and farrows several at each litter.

Dr. Warrington in "Chemistry on the Farm" states that for each 100 pounds of feed consumed, the different farm animals make gains as follows: Cattle 9 pounds, sheep 11 pounds and pigs 23 pounds. Pigs then make nearly two and a half times the gain over cattle for the amount of feed consumed.

The one big enemy is hog cholera, and it is up to the farmer to keep that out by strict sanitation and to see that the anti-hog cholera serum is used properly when the disease does occur.

HEALTH HINTS.

Health hints for hot days:

Don't eat anything.
Chew it thoroughly.
Don't drink ice water.
Boil it.
Let your wife have her way.
Give your thermometer to your enemy.
Avoid excursions, vacations, chautauquas.
Avoid strange dogs and your wife's relatives.

Don't discuss the following: heat records, immigration, tariff reduction, socialism, minimum wage, gas bills, franchises, graft, tire trouble, new thought, cubist poetry, creditors, and debtors.

The swill-pail at the back door is a fly-breeder. Why not put the kitchen slops into a covered pail?

FARMERS' CLASSIFIED MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

White Leghorn Hatching Eggs and baby chicks from scientifically selected and mated breeding stock. Heavy laying strain. Place your order now for fall delivery. **The O. C. McDonald Poultry Ranch, King Road and Jefferson St., San Jose.**

Hicks' Jubilee Hatchery is now booking orders for Sept., Oct. and months following; Circular for the asking; NO PULLET EGGS USED IN OUR HATCHERY; A1 CHICKS are the ONLY ones we ship. **Hicks' Jubilee Hatchery, Route 2, Box 22, Petaluma, Cal.**

Pigeons, Owls, Turbits, Sattinetts, Magpies, Archangels, Dutchess, Runts, Maltese, Carneaux, Homers; these are fancy birds at reasonable prices; birds sent on approval. Address **Wm. Head, Breeder, 1415 7th St., West Berkeley.**

Order Mammoth Bronze Turkey eggs from largest turkey ranch in Stanislaus county, $3 per setting. Address **Crow's Landing Turkey Ranch, Box 227, Crow's Landing.**

Petaluma Hatchery—Now booking orders for fall. August, September and October chicks are highly profitable. Send for circular. **L. W. Clark, Petaluma, Cal.**

Trapnested White Leghorns—Bargains in cockerels from heavy layers; only $1. **Arthur R. Schroeder, box 22, San Gregorio, Cal.**

Colored Muscovy Ducks—Young stock, $3-$5 each; pairs $5-$10. **Mrs. Emma F. Reid, box 54, Senter Road, San Jose, Cal.**

Albert M. Hart, Clements, Cal. (successor to Ed. Hart), Mammoth bronze turkeys and eggs for sale. (Circulars.)

Incubators, Brooders, Supplies, Smith's Universal Chick Feed. Hogan's "Call of Hen," $2, prepaid. **F. F. Smith & Co., 1006 J St., Sacramento. Circulars.**

Rose Comb Brown Leghorn Cockrels, Single Comb Buff Leghorn Cockrels, $1 each. Nicely marked Collie puppies $5 each. **James Lowe, Encanto, Cal.**

Hatching Eggs and Baby Chicks from carefully selected heavy laying strain of White Leghorns. **The O. C. McDonald Poultry Ranch, King Road and Jefferson St., San Jose.**

New Zealand Reds, thoroughbred, from prize stock; Does bred, and young Bucks. **Mrs. C. A. Richey, R. D., Box 557, Los Angeles, Cal.**

Croley's Poultry Condition Powder is a wonderful help to your hens through the molt. Your dealer carries it.

Young Barred Plymouth Cockrels for Sale. **W. T. Neal, Silverton, Ore.**

EDUCATIONAL

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

GOVERNMENT LANDS

Government land-office soon to open 1,000,000-acre Colville Indian Reservation; booklet containing full particulars, with map, price 50 cents. **Colville Reservation Information Bureau, 507 Eagle Bldg., Spokane, Wash.**

REAL ESTATE

For Sale—12 acres near Petaluma; on line of Railroad; 10 trains daily stop at Station, which is two minutes' walk; 8 acres in bearing orchard; finest soil, inexhaustible water supply, modern six room house; city gas, electricity; sanitary plumbing; two hours' ride from San Francisco; even climate; no heavy fogs; price $10,000; mortgage can remain; will subdivide. **Box 1000, Orchard and Farm, San Francisco.**

Victoria, Australia, Wants Settlers—Special inducements; Government land, railways; free schools; cheap irrigation; 31 years to pay for farms adapted to alfalfa, corn, grains, fruit, etc.; climate like California; ample markets; reduced passages; special excursion next November. Free particulars from **F. T. A. Fricke, Government Representative from Victoria, 687 Market St., San Francisco, Cal., Box T.**

Buyer Wanted—40 Acres River Bottom land; 20 acres prunes, 6 acres peaches, 6 acres grapes, 4 acres alfalfa; good 6-room house, barn, fruit sheds, trays, etc. This place is well improved, and from $4,000 to $6,000 can be taken off it each year. A bargain for only $16,500 with terms. **The Anderson Realty Co., Anderson, Cal.**

For Sale—40 acres, 1 mile west of Anderson, Shasta Co., Sacramento Valley; 20 acres full-bearing prunes; 8 acres peaches and other fruit; house, barn, packing-house, good well; gravelly soil; fenced; oak timber. Price $3,500; terms. **C. B. Fitts, owner, Anderson, Cal.**

5 Cents an Acre Cash—Texas school land for sale by the State. You can buy good land for $2 per acre; pay 5 cents per acre cash and no more for 40 years, but 3 per cent interest. Send 6 cents postage for further information. **Publishing Co., Dept. 88, San Antonio, Texas.**

Big Bargain—For Sale, very easy terms, or might lease, cash rent only; full bearing Apricot-Prune Orchard; fully equipped; unlimited water; large house, completely furnished. **Mrs. Jens, R. D. 10, Box 79, Campbell, Cal.**

Big Farm List Free—With photos; farms in many States; farmers' bargains with stock and tools included; dairy, truck, poultry, orchard and grain lands; deal direct with owners. Their address free. **National Farm Exchange, San Francisco.**

Ranches, homes, acres, lots, exchanges. Send for free list. **Wilson Bros., Santa Cruz.**

For Sale—80 acre ranch at a bargain; see us at once. **Belcher & Davis, 313 G St., Eureka, Cal.**

DOGS AND CATS

For $1.00 I will send you Dog and Cat Formulas for Epilepsy, sore eyes. Lice, Tick, Flea powder. Distemper, canker worms and mange. 25c each. **W. J. Donnely, 1288 W. 23d St., Los Angeles, Cal.**

Airedale Hitch, 1 year old. Best stock in Northwest. **Mrs. W. D. Moyer, Yankton, Ore.**

HOUSEHOLD SUPPLIES.

"We Pay the Freight"—To reduce the high cost of living, send for our Wholesale to Consumer catalogue. **Smith's Cash Store, 106 Clay St., San**

REAL ESTATE WANTED

Farms Wanted. We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property Free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted—To hear from owner of good farm for sale. Send description and cash price. **D. F. Bush, Minneapolis, Minn.**

Wanted to hear of good farm or unimproved land for sale. Send description and price. **Northwestern Business Agency, Minneapolis, Minn.**

Young Hollander wishes to buy a good farm or land. Address **Box 1001 Orchard and Farm.**

TREES

For Sale—Grafted Washington navel orange and lemon trees; clean, vigorous, well rooted and healthy, from ½-inch to ⅝-inch diameter; will make special price for large order. Write or call **I. Shoda, representative of the largest nursery association in California, 230 M St., Sacramento, Cal.**

Mission Olive Trees—For March and April delivery; will then be two years old; to be sure of getting Missions, I only plant cuttings from trees I raised 30 years ago; be sure of species before planting. Missions are considered the best. **W. A. Hayne, Marysville, Yuba Co., Cal.**

Bartlett Pear Trees—One year, 4 to 6 ft., $14 for 100; $125 for 1,000. Apple trees, 4 to 6 feet, 7 cents each. Guaranteed to stand inspection. Write for catalogue. **Southern Oregon Nursery, Yoncalla, Oregon.**

SEEDS, PLANTS, ETC.

Spineless Cactus—Luther Burbank's 3 best hardy sorts: Robusta, Pyramid, and Competent; wonderful growers, nice, fresh slabs; each, 50c; 100, $40; 1,000, $300; cash with order. Address or call, **H. L. Bauer's Cactus Nursery, 4401 Hammell St., Los Angeles, Cal.**

BURBANK'S CACTUS—Get my prices. Try sample box Cactus Candy, 40c. You will be delighted. **Haydon's Nursery, San Juan Bautista, Cal.**

MISCELLANEOUS—FOR SALE

Second-hand and New Water Pipe—All Sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

For Sale—Gas Tractor, 4-cylinder, 7½-inch diameter, 8-inch stroke; will do the work of 32 horses; good as new. Address **C. H. Jensen, 502 E. Weber Ave., Stockton, Cal.**

BUSINESS CHANCES

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

LIVESTOCK

For Sale—43 head Holstein dairy stock, Sharples mechanical milker, separator and equipage; everything will be sold to the highest bidder August 17, 1914. Correspondence solicited; photos furnished. **Cooley Bros., Durham, Cal.**

Calves Raised Without Milk—Cost less than half as much as the milk-raised calves. Write for free book to **Coulson Co., Petaluma.**

Registered Duroc Hogs, $15, at weaning time. Out of champion ancestors. **Ed. E. Johnson, Turlock, Cal.**

Pacific Guernsey Herd offers a few very choice young bulls. **C. S. Rasmussen, Loleta, Cal.**

For Sale—Pure Toggenburg bucks and grade does. **Will TeWalt, Pasadena, Cal.**

3 Weaning Boars for Sale; registered "Tamworth," the bacon and block hog; $10 each. **L. J. Archer Jr., R. F. D., Antioch, Cal.**

Mules for Sale. Phone **Oakwood Park Stock Farm, Danville 121,** or **Mount Diablo Park Co., San Francisco, Kearny 3670.**

Your Children will soon grow up; get them a Shetland pony now. Address **Yocum & Sons, Bellota, Cal.**

Registered Berkshires $10 at weaning time. **W. D. Good, Mt. Vernon, Wash.**

AGENTS WANTED

SALESMEN—Earn $2,000 to $4,000 a year. New combination, 12 tools in one. Sells at sight to contractors, farmers, teamsters, fence builders, threshers, miners. Weighs 24 pounds, lifts 3 tons. Stretches wire, pulls posts, hoists, etc. Chance for men who want honest money-making proposition. **Harrah Manufacturing Co., Box M, Bloomfield, Indiana.**

WANTED—Man or lady in each town or small city to compile local cookbooks; easy, profitable work; complete plan, 10c; money back unless satisfied. **Geo. Olive, Willmar, Minn.**

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

SITUATIONS WANTED

Italian Horticulturist, 22 years' experience in Europe and America, expert for new nursery, specialist olive culture, understands farm machinery and rural economies, speaks four languages, guarantee your work, splendid references and testimonials, seeks employment. Address **John Fallia, Box 345, Davis, Cal.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

RABBITS

Belgian, New Zealand and Black Flemish Rabbits—Scored and sold on merit; catalogue free. **Caldwell Bros., Los Angeles, Cal., Box 613.**

The Egg Show---Its Value

Written by J. E. Dougherty for Orchard and Farm

The season of county fairs, poultry exhibits and agricultural shows of various kinds is soon to commence and it has occurred to the writer that this is a most apropos time to bring to the attention of poultrymen a matter that has been on his mind for some time, namely an egg show. "The egg's the thing first, last and all the time" with the commercial poultryman. In the last analysis, it is the number of eggs, the quality of those eggs when they reach the consumer, and the price they bring the producer that are the vital factors in the production of market eggs; and this very phase of the business is the backbone of the poultry industry to-day and will continue to be in the future. The fancy side, while a very important one, is but an offshoot from the principle lines of endeavor—the production of market eggs and poultry.

A great deal of time and energy has recently been expended in teaching people to know the different kinds of fowls and their respective merits. And a number of great egg laying contests are now being carried on to arouse the farmer's interest to the securing of a larger quantity of eggs. Not enough has yet been done however, to stimulate popular interest in securing eggs of better quality. The value of eggs produced annually in this country amounts to over $300,000,000. Seventeen (17) per cent of these eggs, with a value of over $51,000,000 develop into cracks, rots, dirties, spots, broken and moldy eggs before reaching the consumer, because the producer and his agents fail to fully grasp the necessity of maintaining the quality after the quantity of eggs has been obtained. "Quantity without Quality" is not a very strong motto upon which to build the egg industry.

An egg show is fully as valuable as a poultry show and ought to form a part of every winter poultry exhibit held. Poultry shows stimulate interest in better poultry, and their very atmosphere tends to educate patrons to a better understanding of good fowls. Egg shows will educate the farmer to produce better eggs just as fully as poultry shows are helping toward the production of finer fowls.

How many people now know that a good dozen eggs should weigh 24 to 28 ounces, or what a choice dozen eggs should really look like? People ought to know these things. How much thought does the producer give to the shell texture of his eggs? Yet thousands of dollars are lost every year from broken eggs. How much care is given to maintaining the freshness of eggs from producer to consumer? Surely it cannot be as a result of careful thought, or pride in their product, that some farmers drive five miles to town on a scorching hot day with cases of eggs in the rear of their open wagons, basking in the blistering sunshine. Using a covered wagon and making the trip early in the morning or evening would would help so much in keeping these eggs fresh. Again any person who sells incubator eggs as strictly fresh is certainly injuring the market and thereby hurting himself.

Education alone can wipe out such wrongs. And the egg show will play a large part in this educational movement by teaching the consumer as well as the producer just what choice eggs ought to look like, and by acting as a stimulus to increase the pride of each producer in his own product. The establishment of an egg show as as a part of every poultry exhibit will prove a valuable step in securing the production of "better quality" eggs.

All through the winter months poultry shows are held by the various poultry associations throughout the country. Would it not add a big element of interest to such exhibits to incorporate an egg show as an essential part of each poultry show? The egg exhibit would be conducted in exactly the same manner as is the exhibit of fancy fowls, with ribbons and prizes to make it attractive to exhibitors. There could be a fancy egg class containing plates of one dozen eggs each, of the different breeds. This would give people an opportunity to learn the appearance and characteristics of the eggs laid by each breed and how they compare. There should also be a commercial class in which breed would not be considered, but the eggs judged on outside appearance and tested for quality with an egg candler.

Now that the parcel post is beginning to receive careful consideration as a means of marketing eggs direct from producer to consumer and many parcel post packages have been invented and placed on the market an exhibit of eggs packed in different styles of parcel post packages would prove most interesting and instructive. Exhibits of half cases of eggs just as they arrive in the wholesale market from the hands of the producer set off against other half cases properly graded and packed would be a big drawing card and of enormous educational value.

It is due largely to the fact that to a large part of the consuming public anything with a shell on it is an egg, that so many inferior eggs are sold on our markets. The supply is governed by the demand. If the consumer appreciates a choice, freshly laid egg, demands such eggs when purchasing and is willing to pay a fair price over the cost of production and marketing, the producer will see that the consumer gets such eggs. The consumer, as fully as the producer, must be taught the value of new-laid eggs. We cannot hope for any permanent improvement in the condition of our market eggs until the consumer is educated up to an appreciative understanding of choice selected eggs and their worth. The egg show will play a leading part in furnishing this education to the consumer. The poultry associations cannot begin too soon to make the egg show a feature of their poultry exhibits.

Breeding Pen of White Leghorns on McHenry Poultry Yards, Modesto.

THE ILLUSTRATION.

The illustration on this page shows the pedigreed laying stock in breeding pen No. 1 of the McHenry poultry yards at Modesto. The two cockerels in this picture were purchased in New York State. They are part of a shipment of six birds from the D. W. Young strain which are related to the 288 egg hen. Each cockerel cost $25 and although they are not show room birds, they have improved the laying of the general flock 25 per cent by actual comparison. It pays to have the best.

The convention of the National Top-Notch Farmers' Club, which will be held in San Francisco next year is expected to bring to the Exposition a large part of 9,000 boys and girls from 33 corn-growing States of the Union. Each member of the club has produced 100 bushels of corn or better to the acre, the president having made the wonderful record of 232 bushels.

As soon as the crows begin to bother by carrying away chicks, open some eggs at one end and drop in a near the brooder, but high enough few strictnine crystals. Put this to be out of reach of the chicks. A crow will often pass poisoned meat by, but it's hard to resist the temptation of an egg.

One of our houses.

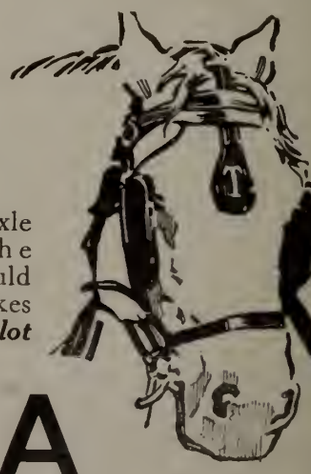
Your Own Home---Build It Yourself!

It's easy—"follow our plans!" Economical—a hammer and your time only building expense. NOT a portable house, but a permanent, substantial, comfortable and attractive home.

We furnish all lumber, trim, finish, doors, windows, paint, stain, nails, hardware, plaster or interior wall board. Each piece is numbered to correspond with our plans. Follow them and you can't go wrong. Your own ideas carried out, if preferred. Send for illustrated catalogue. It shows what others have done. Remember, no experience necessary. Just "follow our plans" with a hammer. Write to-day.

READYBUILT HOUSE COMPANY
984 Broadway Portland, Ore.

ASK YOUR HORSE!



about Mica Axle Grease. If he could talk he would tell you that it makes the load pull a *lot* easier.

MICA
AXLE GREASE

would be a ***good*** axle grease even though it contained no mica. But the ground mica makes it still better. It fills up the microscopic pores or crevices on the surface of spindles and resists friction and heat. It will pay you to use Mica Axle Grease. Dealers Everywhere.

Standard Oil Company
(CALIFORNIA)

MICA AXLE GREASE

THE "BIG IDEA" IN POULTRY RAISING.

(Continued from Page One.)

with surface irrigation pipe and three years ago was nothing but a mass of weeds.

Mr. Wattenberg a year ago had seven cows, but was so pleased with poultry results that he sold the cows, only to find that he had to have cows if he was going to get along, and bought four again.

He also owns six acres in another piece, on which he raised the wheat shown in illustration. Enough of this is fed to give the fowls some straw with heads all the time. They get every kernel in it, too. This wheat was cut in June and will last until winter. After it was cut Egyptian corn was planted on the same land and will give a lot more feed.

The grain is fed in this litter so the hens will have to scratch for it, and enough is put in so that they will always have grain when they want it. Wheat is fed once a day and corn once. It would not do to feed all corn, because the hens would get too fat. Likewise it would not do to give them all they wanted, for then they would not eat wheat at all, but corn as half of their feed is excellent, and most everybody does, or can, raise it, which saves money lost in raising it to sell or buying it to feed. This corn is also best fed in the head to make the fowls work for it, which saves the cost of threshing. That and the raising of wheat in the straw are two other ways that the poultryman has a big advantage in Tulare county and would have an equal advantage in any similar situation. It would not pay for the small man to raise wheat to thresh for the sake of his fowls, but it is excellent when land permits to raise wheat in the straw for both the grain and the straw.

Mr. Wattenberg received during the month of July $42 for eggs from the 125 laying hens. The three milking cows brought in $31.50 for butter fat. The hens at the first of August were laying on an average 65 eggs a day.

In the previous year a definite account of income and expenditures was made and it was found that the hens had netted $1.12 cents each, not counting skim milk, alfalfa pasture or labor, but counting full market price for everything else.

Mr. Wattenberg has the best record of anybody in the Tulare association for the quality of the eggs, which is due to the fact that he lets them lay only in the laying house and gathers the eggs twice a day, so there is no opportunity for an egg to go bad.

Some beef scraps, middlings and similar material is fed as a stimulant at moulting time, but outside of that and shell about the only thing in the way of feed bought for them is the wheat. For the year round on the ten acres and with the help of the other six the income from fowls and cows amounts to nearly $1,200.

Probably first to combine dairying and poultry production on a systematic basis was W. C. Carpenter, about four miles north of town. He has forty acres, irrigated from the

COUNT ON ATTENDING
THE 1914

California State Fair

At Sacramento, Sept. 12 to 19, Inclusive

THIS YEAR THE BIGGEST EVER

A Few of the Features Include

Harness Racing for $30,000 in purses. Second Annual California State Fair Round-Up with thrilling Wild West Show. Free Attractions, afternoon and evening, costing $25,000. Competitive Displays for $25,000 worth of premiums. Band Contests for $3,000 in prizes. Locomotive Head-On Collision. Elaborate Fireworks Display nightly. Live Stock Show, exhibiting the pick of the Pacific Coast Farms. Horse Show, including special Saddle Horse events. Automobile Show, the largest exhibit of cars in the West. Dairy Products Show, with Butter Making Contests. Poultry, Pigeon and Pet Stock Show, unexcelled anywhere. Farm Implement Show with interesting demonstrations. Wonderful displays of California's Resources and the Products of the Farm, Factory and Home, and other Attractions too numerous to mention here, making in all a Big Week of Enjoyment for Everybody.

Special Rates on All Railroads, Trolleys and Steamboats

For Further Particulars Apply to

CALIFORNIA STATE AGRICULTURAL SOCIETY

A. L. SCOTT, President — SACRAMENTO — C. W. PAINE, Secretary

ditch and from a pumping plant when the canal has no more water. The place is only in process of development, so there is lots of work, which Mr. Carpenter does alone, with the help of a son, who is of high school age. There are kept 17 head of dairy cows and 500 White Leghorn chickens. None of the chickens are hatched on the place, day-old chickens or pullets being purchased.

From September, 1913, to the middle of July, 1914, not a bit of feed was purchased, everything in the way of feed being grown on the place. This was due to having an abundance of Egyptian corn that made many of the hens too fat, and about 100 were lost last winter as a result, so after this they are always going to have plenty of wheat and not enough Egyptian corn to cause trouble. Wheat in the straw is grown here for feed and scratch. Also they have plenty alfalfa pasture. There is, however, a difference in the way of feeding skim milk, which is one of the best propositions possible.

The ordinary dairyman who uses his milk for fowls puts it in a barrel, where it is sour immediately, owing to the condition of said barrel. The curd rises to the top and is fed, the whey runs off and is wasted. Meanwhile the flies breed in swarms and an odor rises to the skies and permeates the surrounding atmosphere, as all who know the skim milk barrel on the average dairy know. From the standpoint of chicken feeding, however, nothing is to be said against the plan.

Mr. Carpenter, however, cleans out his barrel, or tub in this case, holding about ten gallons, and clabbers the milk with a rennet tablet. Only one tablet, dissolved in water, does the business, which is less than is prescribed in cheese making. It is applied at the time of separating, while the milk has its animal heat, and needs not be heated, though it may have to be heated in winter. This hardens up far more of the milk than would be secured with ordinary souring, and saves much of the food that would be lost in the whey. The hens are ravenous for the material. The morning's milk goes to the hogs and the calves have to be fed, so the fowls get only a portion of the milk from as many of the 17 cows as happen to be milking. What they get and the insects they pick up supplies all the animal food they need.

This rennet method of curdling the milk can be highly recommended in comparison with the swill barrel method and is no extra work at all. Even the whey is not entirely wasted, but is poured on the straw in the hen yard and the straw absorbs it and is much liked by the hens.

The roosting houses are on runners and are moved around on clean land and the inside painted with crude oil to keep down vermin. The laying houses are simply roofed and without walls. The laying boxes are on frames shoulder high and are composed of kerosene cans laid side by side. They are about as easily kept clean as anything could be and the out-of-doors laying houses, litter, etc., beats the open-front houses all hollow when it comes to sanitation, freedom from dust, labor and so on.

In March the egg check from the 500 hens was $106; in April, $109.55; May, $156.72; June, $131.83; July, returns were not in at time of visit. The cream check for several months was: September, $162.75; October, $125; November, $132; December, $120.45; January, $101.75; February, $92.90; March, $85.60, and so on. Not so bad, when no outside help was required and the place was being improved, also a bunch of pigs kept.

Naturally, all eggs are not going to be extras or selects. The statement for April, picked haphazard from the rest, is an indication of quality from a plant like this. It might be better from a professional egg plant, but is immeasurably better than from the ordinary farm, as was the rule before the success of the Tulare Poultry Association made methods improve. There were 133 dozen selects at 18 cents, 493 dozen No. 1s at 16 cents, 25 dozen No. 2s at 15 cents, 20 dozen No. 3s at 13 cents and 1 dozen cracks. Eggs over a dozen are not given above. Selects are simply very large eggs of perfect quality; firsts are perfect in quality and standard size; seconds are slightly inferior in size, shape or otherwise; so only the thirds and cracks can be called inferior eggs. The hens are all White Leghorns, so no browns were reported.

Details could be given indefinitely about marketing, feed, care and otherwise; but, taking for granted what can naturally be surmised, the big features of poultry production as it exists around Tulare to-day, is growing to be around Visalia, and could be any place in irrigated California, is that the combination of plenty skim milk and alfalfa, together with good prices from good marketing, is making the industry shoot ahead amazingly on the average farm where cows are kept. It is not going ahead on the specialized poultry farm, for there is not a single member of Tulare's Poultryman's Association but what simply keeps poultry on the side, or as one or two or more farm industries; and, furthermore, there is no tendency toward exclusive poultry farming. It is simply a proposition for the dairyman or general farmer, provided he keeps a few cows.

It has proved a substantial success. Without vouching for the accuracy of the figures, it seems to be believed that eggs can be produced from a feed standpoint under these conditions for 8 cents a dozen the year round, while it will cost the exclusive poultryman 15 cents for feed to produce a dozen eggs. In Tulare county it has been a good marketing agency that has developed the whole thing, but that is another story entirely. A few side lights on that will be given later.

POULTRY SHOW DATES.

Following are the dates of a number of the leading poultry shows of California and neighboring States scheduled for the coming season. Others will be added to the list when a definite time for them is fixed, and those dropped when dates have passed.

Sacramento — State Fair Poultry Show, September 12-19, 1914. E. F. Mitchell, superintendent; J. L. McCarthy, secretary, Sacramento, Cal.

San Jose, Cal.—October 7-10, 1914. W. S. Russell, judge. Santa Clara Valley Poultry Association, Charles R. Harked, secretary.

Riverside, Cal.—Riverside County Fair Poultry Show, October 13-17, 1914. E. I. Hammond, secretary.

Stockton, Cal.—October 28-31, 1914. W. H. Mackay, secretary.

Sacramento, Cal.—November 2-7, 1914. C. A. Wilkins, secretary, Sacramento, Cal.

Santa Cruz, Cal.—November 11 to 14, inclusive; E. J. Harran, secretary, Santa Cruz, Cal.

Redwood, Cal.—November 12-15, 1914—San Mateo County Poultry Association, Fred West, secretary, box 701, Burlingame, Cal.

Willows, Cal. — November 18-21, 1914. Otto F. Suchard, secretary.

Oakland, Cal.—November 24-29, 1914. Charles G. Hinds, secretary, 535 Forty-second street.

Pasadena, Cal.—December 1-5, 1914. M. D. Cartwright, secretary, Pasadena, Cal.

Modesto—December 2-5, 1914. A. D. Roberts, secretary.

San Francisco—December 8 to 13, inclusive. W. H. Ingram, secretary, Fruitvale, Cal.

Coalinga, Cal. — December 10-12, 1914. Second annual show. Charles Miller, secretary.

Portersville, Cal.—December 15-17, 1914. E. D. Fawcett, secretary; N. E. Luce, judge.

Phoenix, Ariz.—Arizona State Show, December 23-26, 1914.

Idaho—The State Poultry and Pet Stock Association will hold its next show during the week of January 4 to 9, 1915. W. M. Coates of Vancouver, B. C., will place the awards. L. L. Long, secretary.

Los Angeles, Cal.—January 6-12, 1915. Henry H. Mumford, secretary, Prospect avenue, South Pasadena, Cal.

Kansas City Poultry Show—January 11-15, 1915. E. L. Noyes, secretary, Manhattan building, Kansas City, Mo.

HATCHING BANTAMS

In order to keep Bantams down to standard weight they should not be got out before June. Indeed, June, July and August are the best months in all the year, and preferably July and August for hatching. A clutch hatched as late as the middle of September will hold the Cochin Bantam down to less than one pound. I own a pen hatched the first week in September last that weigh 8 to 12 ounces. They are little beauties, but under standard weights. The females are laying, too.

The hustling hen is the persistent layer.

Lice-Trap Roost-Bar

A mechanical means of ridding poultry of Mites and Lice and all other vermin. Powders and liquids unnecessary. Guaranteed to get all the vermin off the poultry. Write for circular, or send 50c for 36-inch sample, prepaid by parcel post.

WOODALL MFG. CO. (Desk No. J-1)
Davenport, Iowa, U. S. A.

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50

Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. ct. Use any injector, but Cutter's simplest and strongest. Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (ours or any other), as it affords less protection than fresh. Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly.
THE CUTTER LABORATORY, Berkeley, California.

Ask Your Dealer for
EL DORADO COCOANUT OIL CAKE
for Milch Cows and Chickens and Young Pigs and Hogs. Cheapest food in the market to-day. If your dealer doesn't carry it, address
EL DORADO OIL WORKS
149 California St. San Francisco

Not a mixture - but a straight run refinery product

RED CROWN

The best gasoline the Standard Oil Company can make

Epistles of an Automobile to Its Maker

—By Thomas Howard—Epistle III—

1—Remember this, that the enemy hath reproached me, Oh Factory, and the foolish have blasphemed thy name.

2—So forget not the voice of thine adversaries when thou sendeth in mine repair bills..

3—For did not John Spark-Jones, even after we traveled on the level road which continueth from the grade of San Juan,

4—Forget mine emergency brake was still set, so he burned out mine brake lining.

5—And I say unto thee, he considereth not thine commandment, which saith mine radiator shall carry water for mine engine.

6—So it smoketh and it smelleth more than the bacon which the cook putteth in the fry pan and forgetteth in its cooking.

7—And it laboreth in the over feverish endeavor. So its pistons and its valves become gummed in the carbonization.

8—Then Maude crieth unto the man, even unto John Spark-Jones, who was made one with her through legal wedlock:

9—"Stop the thing so I may get out, for verily I say unto thee, it is afire in its inwards."

10—Then, oh my Factory, did they alight and the man raiseth mine hood to look at the carburetor.

11—And the smoke rolleth out.

12—So she shrieketh: "Put it down and get a bucket of water quickly,

13—Lest we lose our investment."

14—Doth not thine anger smoke against these sheep of lunacy?

15—For he runneth to a neighboring farm and bringeth water, which he throweth on mine engine.

16—And the farmer bringeth another, which he throweth at mine brakes.

17—See they not the signs I dislike cold water on mine overheated cylinders?

18—Or I perish from the chill which freezes mine marrow, so I creak and I crack in the contraction of mine parts.

19—Thus I cool as they three discuss mine poor manufacture.

20—And the he—Spark—telleth the farmer the feed hath bothered the carburetor the livelong day.

21—So it needeth adjustment, which he preceedeth to adjust.

22—And the She-Spark explaineth the infamy of an instruction book which faileth to instruct.

23—Arise, oh my Factory, plead my cause, for he trieth to crank me, and I am froze stiff so I cannot turn over.

24—And the farmer offereth to drive them unto the nearest garage, so the country mechanic may disrupt my bowels

25—In search of mine malady.

26—Then the woman saith in her heart: "Better it be he go with the farmer, lest he make calamity, catastrophe,

27 "And our investment be an utter ruin," for she liked not the method of her husband's explanation.

28—So she bade them go quickly.

29—Lift not your heads on high, ye amateurs of autodom, neither curse the manufacturers, nor the car, for thine own faults.

30—For what saith the country mechanic which the farmer and mine owner fetcheth from the nearest garage,

31—After John Spark-Jones hath explained the fault of the thing lay in the carburetor:

32—"If thou hadst put water in thine radiator and unloosed thine emergency brake, these troubles would not have troubled thee."

33—And rejoice, Oh Factory, in thine vengeance, for he addeth: "Return with thine purse filled with shekels in a week and I will give thee thine car again."

34—Then Maude Spark-Jones berateth John Spark-Jones as a fool, and the farmer smileth.

RESTORING THE GRAIN YIELD

(Continued from Page 6.)

has been found to be a more economical practice to disk the stubble, the mulch thus formed being sufficient to reduce the loss by evaporation to a considerable extent. Where the rainfall is very low some form of cultivation must be given at this time to save the water which still remains in the soil for the succeeding crop.

If the plowing has been properly done in the summer or fall, a good mellow seed bed may be prepared with a disk, after which the seed should be planted with a drill. Drill seeding is preferable to broadcasting, inasmuch as the seed is more evenly distributed and may be placed at a uniform depth in contact with moist soil. This not only hastens germination, but will give all the plants an equal chance for development.

When we remember that under field conditions one acre inch of rainfall is only sufficient to produce two and one-half bushels of wheat we can readily understand that when the annual precipitation is less than fifteen inches a good crop cannot reasonably be expected every year. It is generally conceded that in order to secure the best results an occasional year of fallow must be resorted to, though the frequency with which it should appear has not been definitely determined. In all probability this will depend to some extent upon local conditions. A good rule to follow, however, is that where the normal annual precipitation is less than twelve inches, the year of cropping and the year of fallow should alternate. When the annual precipitation is over twelve or fifteen inches, fallowing every third or fourth year may be sufficient.

In preparing the land for summer fallow the same procedure should be followed, as when preparing for a crop. If the fallow is to be most effective a good mulch should be constantly maintained and the land kept free from weeds, as they utilize a large amount of the moisture for their growth. During the summer season the field should be disked or gone over with a weeder at least once every four or six weeks, as the rate of evaporation at that time is much greater than during the cooler part of the year.

It will readily be seen that the success of dry farming depends largely upon relentless cultivation. The lower the annual rainfall the greater will be the necessity for cultivation, in order to maintain profitable yields or to prevent crop failure.

By constantly observing the principles of moisture conservation and by practicing deep and thorough tillage, even the older grain farms of the State may be restored to their original productivity. In many instances it may require two or three seasons to thoroughly subdue the plowsole and to restore the physical condition of the soil, but experience has shown that persistent effort is sure to be crowned with success.

It is, of course, true that a one-crop system is not the best farm practice, but the limited number of crops adapted to dry farming on an extensive scale renders an adequate system of rotation under such conditions extremely difficult. Inasmuch as the cereals, especially wheat and barley, are the most efficient dry-farm crops that we have, they will without question always continue to hold an important place in the agriculture of the State, whether grown singly or in rotation.

In the maintenance of good yields there is in reality no secret. All that is necessary is to apply, to the best of our ability, the principles of moisture conservation and to practice deep and thorough cultivation in order to make the fullest use of the deep fertile soil that nature has provided.

(Note—The great possibilities for improving grain production in California by changing methods to a reasonable extent and not in any revolutionary fashion induced "Orchard and Farm" to secure the above article from Prof. Madson, who has been engaged with others of the Division of Agronomy of the University of California in investigating cereals for a number of years. Results on the University Farm and elsewhere, giving vast increases in yield over normal production, show that the above is not merely theory, but amply demonstrated in practice. When you come down to it, the fundamentals of renewed fertility of grain land are in large part the breaking up of the plow sole, good deep cultivation and cultivation to conserve moisture. Whatever improves the texture of the soil by conserving humus, also conserves moisture and is of value otherwise. Moisture, good cultivation, good soil conditions are essentials with any crop and the basis for success.—Editor.)

A bulletin of the United States Department of Agriculture (No. 100) recently issued, entitled "Walnut Aphides in California," gives full directions regarding the control of this serious pest. Recent work has shown that winter spraying works out very well and is most advisable where the aphis is bad, but if the insects are bad in summer a combination of 2 per cent distillate oil emulsion and strong commercial tobacco extract (1 to 1,500) is recommended. The winter spraying is directed against the eggs and summer spraying against the insect itself.

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT, with List of Inventions Wanted and Prizes offered for inventions, sent free. PATENTS ADVERTISED. **FREE**
WANTED—NEW IDEAS
Send for our list of Patent Buyers.
VICTOR J. EVANS & CO., 836F, Washington, D. C.

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted **R**
Watson E. Coleman, Patent Lawyer, Wash., D. C.

ZEROLENE

Keeps the Motor Cool

Dealers everywhere. Ask our nearest agency about delivery in bulk.

Standard Oil Company
(CALIFORNIA)

Useful and Up-to-Date Patterns

No. 5804—Girls' Dress. Without lining. Having short two-piece sleeves in one with body and lengthened by one-piece cuff sleeves. High or round neck and attached skirt having four gores with front and back gores in one with body, and circular flounce side gores. Closing to left of center front under plait. Sizes 6, 8, 10, 12 and 14 years. Size 8 requires 3½ yards 36-inch material. Price, 15 cents.

No. 12047—Transfer pattern, 10 cents.

No. 5801—Misses' Semi-Fitting Costume. Basque having sleeveless lining. High, round or square neck and attached two-piece skirt with high waistline and closing at center front. Long, one-piece outer sleeves in one with body and perforated for short sleeves. Attached straight side-plaited tunic with front in either two styles. Width around lower edge of skirt about 1½ yards. Sizes, 14, 16, 18 and 20 years. As illustrated, size 16 requires 3¼ yards 54-inch white material. 1½ yards 54-inch dark material for two skirt gores and revers, and 1⅜ yards extra wide material for sash. Price, 15 cents.

No. 4406—Boys' Pajamas. Sizes 4, 6, 8, 10, 12, 14 and 16 years. Size 8 requires 3⅞ yards 36-inch material. Price, 15 cents.

No. 5610—Girls' Coat. Back, sleeve and front yoke in one piece. Perforated for short sleeves. Square collar perforated for round collar and attached to two-piece skirt. Sizes, 4, 6, 8, 10, 12 and 14 years. Size 8 requires 3½ yards 36-inch material, 3 yards 44-inch material or 2¼ yards 54-inch material; either with ¾ yard 36-inch contrasting material. Price, 15c.

No. 4556—Maternity Waist. Without lining. Having high neck with standing collar, or open neck with round collar. Full-length sleeves with plain cuffs, perforated for short sleeves with turn-back cuffs. (Order by normal measurements). Sizes, 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 4 yards 27-inch material. Price, 15 cents.

No. 5001—Ladies' and Misses' Gymnasium Suit. Blouse with high neck perforated for open neck with sailor collar and adjustable shield. Long one-piece sleeves perforated for short sleeves. Bloomers plaited at top and closing on left side. Sizes, 14, 16, 18 and 20 years and 32, 34, 36, 38, 40 and 42 bust. Size 36 requires 5¼ yards 44-inch material. Price, 15 cents.

No. 5715—Misses' Russian Tunic Costume. Without lining. Having long one-piece sleeves perforated for short sleeves. Adjustable shield, high waist line and attached two-piece skirt, with lower front edge straight or rounded. May be made with or without one-piece circular tunic slightly gathered at top and lower edge straight or scalloped. Waist and skirt closing in front and tunic at center back. Width around lower edge of skirt about 1¼ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 4¼ yards 44-inch or 5½ yards 36-inch material. Price, 15 cents.

No. 5816—Child's One-Piece Dress. Without lining. Having long shoulders and long one-piece sleeves, with or without turn-back cuffs. Perforated for short sleeves. High neck perforated for square neck. Sizes, 2, 3, 4, 5 and 6 years. Size 4 requires 2¼ yards 36-inch material. Price, 15 cents.

No. 4340—Ladies' House Apron. In princess style. Having full-length one-piece sleeves. Closing to the left of center front. Sizes, 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 4⅜ yards 36-inch material. Price, 15 cents.

Address all pattern orders to Household Department, "Orchard and Farm," Hearst Building, San Francisco, Cal.

A BLOSSOM FOOD.

Take six or eight summer squash blossoms, remove all the green; one egg well beaten, a pinch of salt and one teaspoonful of flour. Dip the blossoms in this mixture and fry in butter. This dish is really very good.—MRS. A. ROSS, Ripon, Cal.

PEACH SALAD.

Peel large ripe peaches, cut in halves and remove pits. Fill the cavities with a mixture of broken walnut meats, pieces of pear and a bit of celery or minced parsley. Place on ice until chilled and serve with whipped cream.—MRS. C. R. FIELD, San Jose, Cal.

Cooking is so important!

Good cooking helps the health and happiness of your family.

Surely you should have a range that will enable you to do your *best* cooking.

"Majestic" makes good cooking easy. It is not just "so much metal put together to hold fire"; each part is scientifically built to do its work **just right.** Made of malleable and charcoal iron, metals that resist rust and wear three times as long as ordinary range metals.

All joints cold-riveted (no putty used)—a Majestic stays tight—holds the heat in, maintaining uniform baking heat with least fuel.

The Majestic provides perfect baking qualities, plus fuel-saving and work-lessening features that you cannot get in ordinary ranges. The little extra it costs is more than repaid by the years longer wear that it gives.

The health and happiness of your whole family is effected by the range you buy. Investigate **thoroughly.** There is a Majestic dealer in every county of 40 states; if you don't know the one near you, ask us, and get "Range Comparison" explaining Majestic ranges fully.

Majestic Mfg. Co., Dept. 206 St. Louis, Mo.

More and hotter water!

Majestic water heating front is fitted with eight hollow pins that extend right into the fire; giving greatest water-heating surface of any range made; heats more water much quicker and hotter than ordinary water front.

Great Majestic

Malleable and Charcoal Iron Range

CONTROL OF MOSQUITOES.

Mosquito trouble may be greatly lessened by removing all small water-holding vessels from the premises, screening the larger receptacles, draining all pools that can be drained, pouring a little low-grade kerosene on those that can not be drained, and planting young fish in the streams. These plans are recommended by A. L. Lovett of the entomological department, Oregon Agricultural College, who further states that mosquito attacks may be repelled to some extent by liquid repellants and by smudges.

Repellant liquids recommended are spirits of camphor, oil of pennyroyal, oil of peppermint etc. They are applied by putting a few drops on a bath-towel and rubbing the towel on the face or suspending it above the pillow. A good combined repellant is made of essential oil of orange, 30 grains camphorated alcohol, 30 grains oil of cedar, 15 grains, or of equal parts of castor oil, oil of lavender and alcohol.

Inside smudges are produced by burning either camphor or pyrethrum powder. Burning a ball of camphor the size of a hen's egg over a small lamp makes an effective smudge. Pyrethrum is first made into a ball by moistening it in water and moulding into cones as large as chocolate drops, and then placed in shallow dishes and burned by lighting at the apex. One cone gives smoke enough for the average size room.

Remedies for bites are as follows: Rub moistened toilet soap over the wounds, or apply either ammonia or alcohol to the punctures.

APPLE GRAHAM PUDDING.

Place a layer of graham crackers in the bottom of a buttered pudding pan, then add a layer of pared, cored and chopped sour apples, then more crackers and more apples until the pan is two-thirds full. Beat one egg light, add one pint of milk, turn over the apples and crackers and bake until puffy and brown.—MRS. C. R. FIELD, San Jose, Cal.

Delivered FREE EVERYWHERE

TEA & COFFEE at Wholesale Prices

60c Tea 45c	40c Coffee 33c
50c Tea 35c	35c Coffee 29c
40c Tea 30c	30c Coffee 25c
Any Flavor	*Whole or Ground*

2 lbs. Rex Tea 60c quality for 85c
3 lbs. Rex Coffee 40c quality for 98c

"Money Back" Guarantee

SEND ORDER—MAKE BIG SAVING

OWENS SALES COMPANY

636 Phelan Building San Francisc

GOOD FROM GUM-CHEWING

In traveling recently I got a larg cinder deeply imbedded in the wh of my eye. I tried to remove it wit tissue paper, handkerchief and othe trustworthy methods, but all in vai A young girl across the car gave m a stick of gum to chew until it ha become soft and smooth. Then sh took the gum, first moistening he fingers to prevent its sticking, an twisted one end into a point ar placed it on the offending cinde which immediately came out. Th method is perfectly safe. The ey being moist the gum cannot stick injure it, but it will quickly colle and hold any foreign matter.—MR HARRY BAILEY, Hood River, Or

CANDLES ON CAKE.

Most mothers honor each birtl anniversary with a cake, but many not use the candles for decorati because of difficulty in making the stand. Try this plan:

With a hot hatpin bore holes in t bases of the candles and insert woo en toothpicks. Leave the toothpicl long enough to hold the candles firm ly erect when they are pushed in the cake. The pleasure the little on take in their birthday cake more th compensates for any extra efforts r quired in its achievement—MR HUGH STOKES, Santa Cruz, Cal

The Household Exchange

Apparently the matter of selecting meat is one that is not given a great deal of attention, or few people know well how to pick out the best cuts, or what kind of meat is best for the pointers on this subject were few, and most of those related to cooking, not selecting meat. By the same token these suggestions will evidently prove far more valuable than suggestions regarding matters better understood. For the five leading suggestions given herewith we are sending either a spring balance or a food chopper and to authors of the others some article which will be of value around the house. We do not know, however, but with good cooks like those whose names appear this issue, both balances and food choppers are likely to be owned already.

General household topics for suggestions are almost exhausted, so it seems to us, though we have several more in mind and suggestions themselves are unlimited, and we would like to hear from anybody who thinks of some topic as yet untouched. For the October issue we believe that the general subject of made overs in the way of clothes would be a good one. Economy is very desirable if not carried too far, and frequently at small expense made overs or alterations can be used with excellent results in appearance. For suggestions the usual awards will be given.

We have on hand, by the way, a number of hints on uses of fruits which may not be used until the next season, also quite a few kitchen conveniences, household remedies and other suggestions which were crowded out of previous issues, but which will be used from time to time.

When sending in suggestions the following rules must be observed:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only, and sign name and addres safter each suggestion.

Not more than two suggestions a month may be sent by one person, and only one award will be given to one individual in a single month. Do not send a letter with your suggestion. The suggestion itself is enough.

Address all your suggestions to Household Editor, "Orchard and Farm," Hearst building, San Francisco.

We wish to particularly emphasize the importance of keeping the suggestions within the limit named for length.

The suggestions for this month follow:

Selecting Meat.

Veal is generally preferred with delicate whiteness, but is more juicy and well flavored when deeper color. Butchers bleed calves profusely, producing white meat; this deprives meat of much nourishment and flavor. Choosing veal, notice loin. If the kidney which is found on under side of one end of loin be deeply enveloped in white, firm-looking fat, the meat is good and has been recently killed. The kidney changes first, then the surrounding suet becomes soft and the meat soft and flabby. Fresh pork has thin rind. Meat is smooth and cool. When stale, looks flabby, feels clammy. If you perceive many enlarged glands or kernels in the fat, you may know it is not wholesome. Bacon should have thin rind. Fat, firm, reddish color. Lean adheres to bone without yellow streak. Ham, well cured, when stuck with knife, nothing adheres to knife.—MRS. ALFRED L. BATY, Cedarville, Cal.

Selecting and Cooking a Roast of Beef.

Prime meat is firm, dark red color, not too lean, and under pressure the thumb sinks into the meat. The oven must be hot, so the meat will brown quickly to retain the juices. Wash, place the meat in the roasting pan, add about two cups of hot water. Turn the meat until all parts are seared. When the beef has been cooking fifteen minutes, season with salt and pepper. Baste the roast frequently until it is done to suit the taste. Do not pierce with a fork in turning, as that lets out the juices. When done, remove from the pan, add thickening to contents of pan, and you will have an appetizing brown gravy.—MRS. J. L. BEVERS, Oleta, Cal.

Left Overs.

I have found that on a farm where help is employed, the small "left overs" of meat, if not taken care of, become a source of great waste, and I have contrived a number of ways of taking care of them, a few of which are: Make a baking powder biscuit dough without shortening, roll ½ inch thick, spread with chopped left over meats, well seasoned and moistened with cream or beef stock, roll and steam one-half hour. Or take left over macaroni, rice, mashed potatoes or all three and put in bake pan with alternate layers of chopped meat and bake until a nice brown. Scraps may be kept until enough have accumulated for these dishes by putting them in economy jars and steaming two to three hours, after which they will keep any length of time.—MRS. F. E. SCHROEDER, Allan, Cal.

Braised Tongue.

Prepare beef tongue in usual manner, remove gullet, salt, let cool in broth, then remove skin. Turn thick part tongue inward, hold firmly, lap top around, drive skewer through both, take strip muslin width of tongue, bind firmly and sew, set aside Brown in pan two heaping tablespoons butter and add one carrot, two medium-sized onions, one medium-sized potato, one turnip (all sliced), one bay leaf, stalk celery (or salt), sprig parsley. Stir over brisk fire till glossy, but not scorched, add one quart of beef stock or broth from tongue. Put tongue with vegetables, cover and bake two hours. Turn occasionally, stir up vegetables. Remove cloth and place in tin to brown. While browning, rub vegetables and broth through sieve; return to fire. Blend two tablespoons flour with one cup tomato juice, add pinch salt, pepper, a dessert spoon Worcestershire sauce. Stir these in broth, boil up sharply, pour over tongue and serve. —MRS. L. D. SMITH, Washoe, Nev.

Scotch Broth.

Take three pounds mutton. Take out the bones and fat and cut meat into small pieces. Put the meat into three quarts of cold water with ½ teacupful each of pearl barley, chopped onion, turnip, carrot and celery. Add pepper and salt to taste. Tie the bones in a piece of white cloth, put in with the other ingredients, bring the stew to a quick boil, skim it, then allow it to simmer slowly for three hours. Thicken with flour and add one tablespoonful of chopped parsley.—MRS. E. L. PERRY, Sonoma, Cal.

Smothered Liver and Bacon.

Fry six or eight thin slices of bacon until brown and remove from pan. Slice a pound of liver and dredge with flour. Place slices in the hot bacon grease and fry brown on one side, then turn over and lay the slices of bacon and two onions cut in thin slices on top of liver. Cook a few minutes, then add a pint of hot water and simmer, tightly covered, for fifteen minutes.—MRS. C. R. FIELD, San Jose, Cal.

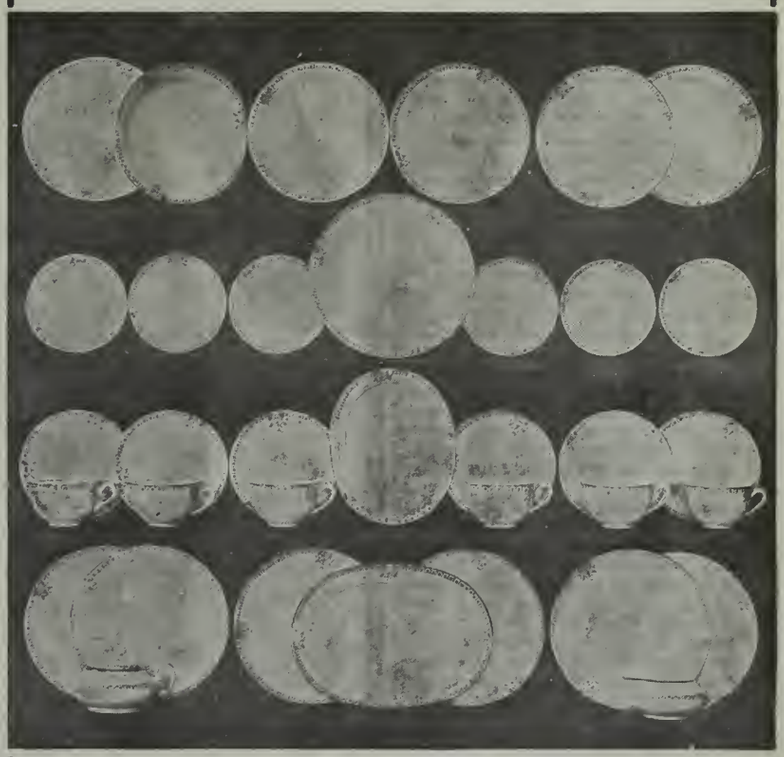
Spiced Beef.

Take 25 cents' worth of neck or shoulder beef and a 25-cent shank soup bone. Wash clean and put on to boil with cold water and a handful

36-Piece Set of Dishes With Orchard and Farm

By special arrangements for a limited time, ORCHARD AND FARM will give all its subscribers an opportunity to secure this exceptionally fine 36-piece dinner set of Kokus Sterling china dishes. The set was selected out of hundreds of samples submitted, the first consideration being for quality and then for the attractiveness of the pattern. It is only by buying in carload lots that we have been able to buy them cheap enough to offer them to you free of cost. A suitable set for home use or for gift. Every housewife will be proud to display these dishes on her table.

Orchard and Farm's Dinner Set



This Set Is Composed of

six full sized dinner plates, 9¼; six full sized soup plates, 7¾; six full sized cups, six full sized saucers, six full sized dessert dishes, one cream pitcher, one 11¼ meat platter, one oblong vegetable dish, one 9¼ salad dish, one sugar and cover.

The above illustration does not do justice to the dishes. It is only published to give those interested an idea of the pieces contained in the set.

OUR OFFER

No. 1—This 36-piece Dinner Set will be shipped absolutely free, all express charges prepaid, to any address, not to exceed one thousand miles from San Francisco, upon receipts of $6.00 in subscriptions at our regular rate of 50 cents per year, or 3 years for $1.00.

No. 2—Another way of securing this set, all express charges prepaid to any address within a radius of one thousand miles of San Francisco, is by sending $1.00 for a three-year subscription, to be sent to a friend or neighbor, $1.00 for a three-year subscription to be mailed to yourself (new or renewal), and $2.75 additional, making a total of $4.75, to help defray expense of set, expressage, etc.

ORCHARD and FARM

Hearst Building **San Francisco**

of salt. Cook until the bones can be easily removed, then pour the liquid into another vessel and when the meat is cold put through a meat chopper; then skim all the fat of the liquid and save for frying and cooking purposes. Add the jellied liquid to the beef, season with salt, pepper and cloves, and simmer a few moments and set away to cool. This is fine for lunches, very appetizing and very economical and helps to reduce the high cost of living.—MRS. F. SWANSON, Fallon, Cal.

To Keep Meat Fresh.

Rub equal parts of melted butter and vinegar over fresh meat and it will keep in good condition for several days and the flavor will be greatly improved.—MRS. J. L. BEVERS, Oleta, Cal.

Delicious Round Steak.

Cut round steak in two or four inch squares, cut thin pieces of bacon in narrow strips and lay three or four strips on each piece of steak. Roll up and tie with thread or fasten with toothpicks. Put in a kettle with a little water, season with salt and pepper and a little bay leaf. Do not have steak cut too thick.—MRS. A. JOSEPH, Quincy, Cal.

Jellied Meat.

Take four or five pigs' feet and five or six pounds of the neck or other cheap cut of beef. Put the meat in separate kettles, adding two or three sliced onions to the pigs' feet. Cover with water, season with salt and pepper and cook until so tender that the meat slips easily from the bones. Add water as needed to keep meat covered while cooking. When done, cool, remove fat and shred meat in small pieces. Save the beef broth for soup stock. Heat the pigs' feet broth to boiling point and strain to remove all small bones. Add all the meat, stir well and put in molds to cool for slicing. This is almost as good as jellied chicken and much less expensive.—MRS. C. R. FIELD, San Jose, Cal.

FRUIT IN THE FOOTHILLS

(Continued from Page 2).

occupied by human inhabitants, trees and vines look fresh and young as if faithfully attended. The cabins themselves have the ruin only of neglect, not of vandalism and look more picturesque than dilapidated, as any house near town would soon look.

When it comes to soil to be selected for fruit there are several types, derived from granites, slates, lava and so on. It is of varying degrees of richness and value, but except in the hollows or where sedimentary, it is rarely as rich as valley soil. As a rule the fruit grower or general farmer should get a soil with some clay in it—the more the better as a general rule. A good granite soil with fair amounts of clay is a first-class fruit soil whether on ridges, slopes or hollows. Some clay ought always be looked for in foothill soils. On satisfactory soil wherever located, provided the exposure is right for fruit and moisture is available, fruit does excellently.

In little hollows and on side hills also when irrigation is practiced old orchards may be kept in grass, particularly red clover and rye grass, which flourish up to the brightest expectations. Almost every level orchard around Placerville is in clover and rye, and the trees, instead of being handicapped, look fine in every sense of the word—fine to the lover of beauty and to the practical fruit grower. Clover and ryegrass may be grown in hillside orchards also if sufficient irrigation is practiced. It is generally considered best to practice clean cultivation on young orchards and to have grass only on full bearing trees.

It is a horticultural rule that a wooded country is a fruit country, and a rule that mountain fruit is fruit of quality. California fruit has largely been grown in the valleys, but the Sierra foothills are proving their adaptability in producing heavy and uniform crops of fine quality fruit and the last few years have shown a tendency to revive an activity rivaling that of the gold days, but of a different and more substantial sort.

To prevent cloudy spectacles, rub both lenses with soap, rub off with chamois and polish with tissue paper and they will never steam.

To remove shine from cloth, use a little turpentine on a wool cloth and rub all over thoroughly.—MRS. R. C. O'NEIL, Wells, Nev.

Before putting on the baby's new shoes be sure to go over the soles first with sand paper and you will save it many a dangerous fall.—MRS. JOHN BRUNGES, Point Arena, Cal.

ORCHARD and FARM'S NEWEST GIFT TO ITS LITTLE BOYS AND GIRLS

FREE TAMBO The Clown Doll

Made Especially for Boys and Girls of Orchard and Farm's Family

The laugh of a child! What happiness there is in the lifting tone! What cheer it brings to the household! The laugh of a happy child—it turns the gray days to one of sunshine and gladness and the joy of living. And what will make a child happier, what will bring the dear little crinkles to the corners of the cherry lips more quickly than the funny face of a clown doll! Don't you remember when you sat with the little one on the seats of the great circus tent and watched the funny, rollicking clowns as they jumped here and there about the ring? Don't you remember, too, how that little one who accompanied you, laughed and crooned and clapped the tiny hands in the wonderful enjoyment of it all? There is nothing funnier, nothing more enjoyable to a child than the sight of a funny, painted clown, with his queer dress and his big, droll eyes. And so knowing this, ORCHARD AND FARM gave forth orders to its expert designers that they must produce the funniest clown in the world. The designers have done it. One look at TAMBO—that is his name, you know—and the children cannot help laughing. There are no tears when TAMBO is around—unless he should happen to be lost, for Tambo is funny. There is an air of happiness about him, a supreme manner which tells you that he knows he can bring the laughter—and he is perfectly satisfied with life. And Tambo has his own mission in life. The days may be stormy and dark, they may be cold and dreary, but where Tambo is, there is happiness. Should the months be those of winter, they will turn to summer again, for Tambo will bring back the days of the great spreading canvas tents, and the sideshows with their banners flapping in the summer wind, the great platform, where the man with the red vest taps loudly with his cane and shouts: "Step closer! Step closer—everybody—and see the snake with the gold tooth!" There is no need for the tents and the platform and the great lot with its lemonade stands, when your child possesses a TAMBO CLOWN DOLL. He is a circus all in himself. He never loses his temper. He never loses his smile. He never loses his funny outlook on life. He is Tambo the merry, day in and day out. Day after day the designers for ORCHARD AND FARM worked and studied that they might produce the funniest, the happiest little doll in the world—and they have succeeded. Queer, indeed, is the child who will not laugh at "Tambo."

TAMBO, the Clown Doll

is about 17 inches high and is the best playmate any child could desire. You can't help but laugh when you see its cute, funny face. Tambo is beautifully lithographed in many colors on good quality cloth, all ready for cutting out and stuffing. When stuffed, the limbs are movable, permitting the doll to be placed in any kind of position. It is much preferable to a china or wax doll, being practically indestructible. They can't be broken, no matter how thrown about. Tambo is dressed in fancy costume and you are not put to the trouble of making clothes.

GIRLS AND BOYS:

Children—ask your father or mother help you get Tambo, the clown doll. They can simply renew or extend the family subscription for one year at 50c, and Tambo, the clown doll will be sent as your premium. Later, when you see how cute Tambo is, you may want to get some more for a birthday present to give some of your friends. This you can do by getting some subscriptions. The work is not hard.

MOTHERS:

There isn't anything you could possibly give your children that would give them so much pleasure, or do them and you the same amount of good as Tambo, the clown doll. If your own child is now too old to care for a doll, make happy some other girl or boy by a present of Tambo. If your child wants the doll and is old enough to do the small amount of work necessary, please encourage and help it. This doll alone retails for 35 cents, and is well worth the money. Order now while you have the matter before you.

How to Get Tambo, the Clown Doll

Send us a new subscription for ORCHARD & FARM, which is only 50c per year, and Tambo will be sent free of all cost to you by return parcel post. If you cannot get a new subscriber for ORCHARD & FARM, just get your papa or mamma to extend your own family subscription for another year at 50c. Send us this subscription, and by return mail we will send you Tambo.

(Coupon)

ORCHARD & FARM.
Hearst Building.
San Francisco, Cal.

Enclosed please find 50c. Please mail to address below ORCHARD & FARM for one year and Tambo, the clown doll, as per your offer above.

Name_____

Town_____ State_____

_____
(Name of party to whom Tambo should be sent.)
Return this coupon with order.

BRENTWOOD IRRIGATED FARMS

"Best in the West"

No better dairy farms in all California. Alfalfa and dairying on Brentwood Irrigated Farms bring large and certain returns.

Brentwood Irrigated Farms are located east of Mt. Diablo in Eastern Contra Costa County on the Southern Pacific railroad. The Santa Fe is about five miles distant. Water transportation about four miles from the east line of the property.

Within 60 miles are the million people of the San Francisco Bay district—a market for everything you will raise, including fruits and vegetables as well as dairy, poulty and pork products.

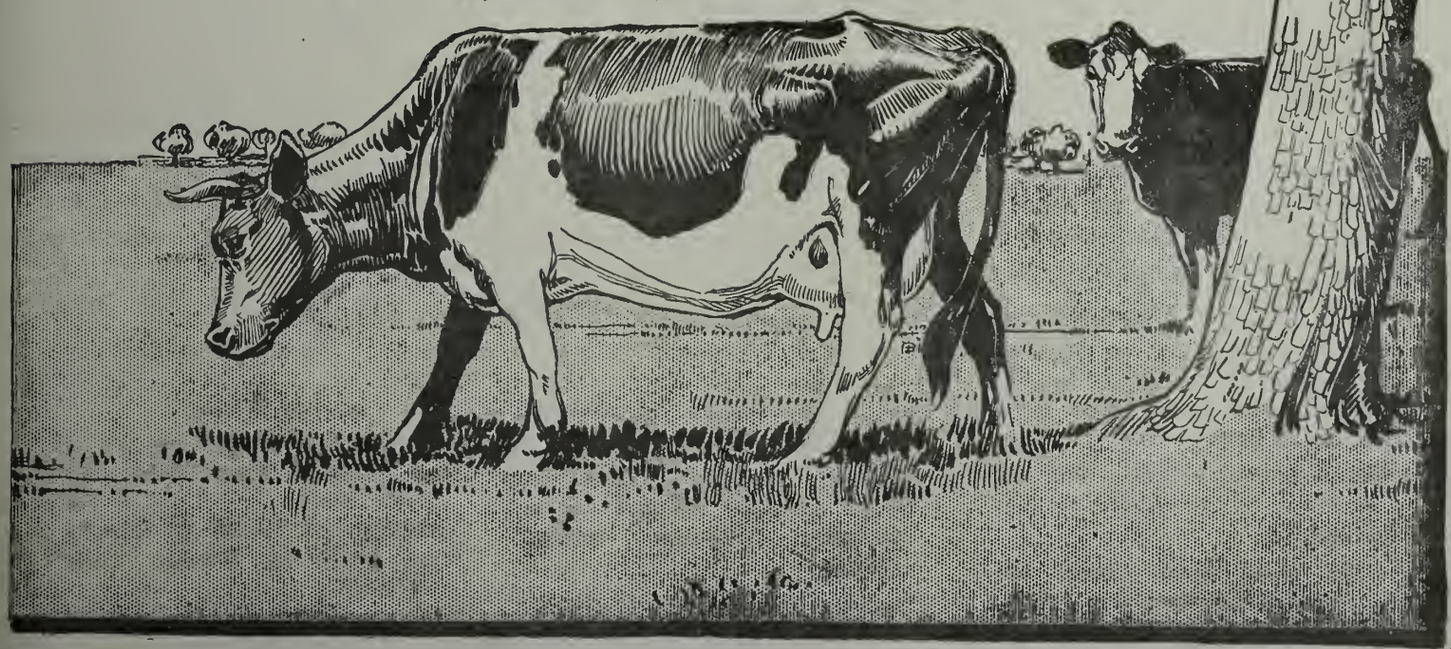
A complete irrigation system of the highest and best type of construction.

Practically every known California product can be grown here.

Prices, $300 an acre including water right. Write for illustrated pamphlet.

Balfour, Guthrie & Co., 350 California Street, San Francisco

A. Burness, Resident Agent, Brentwood, Calif.



EXPERT SERVICE

Is given to subscribers of Orchard and Farm in the Department of **ANSWERS TO FARM PROBLEMS.**

Subscribers will often find a single answer worth many times the subscription price.

Each question, whether it be on livestock, fruit growing, soil handling, mechanical questions or household problems is given careful expert attention and the meat of the question is boiled down and printed for all our readers. No more valuable source of information exists for California farmers than this Expert Service Department of Orchard and Farm.

Use this service in your daily work and if you have questions to ask put them up to us.

ORCHARD AND FARM, Sixth Floor, Hearst Building, San Francisco, Cal.

How to make Chickens make Profits

The Sperry booklet, "Makes Hens Happy," has been compiled by men who know the essentials of a perfectly balanced chicken feed. It tells what ingredients a feed must contain to make chickens lay.

You know that chickens to be healthy and strong must have the right kind of feed, composed of the right food elements. An excess of any one kind of feed means a lack of some other important element the chicken needs for egg production. Consequently there is a more or less degree of starvation, even though your hens seem to be getting enough to eat.

Get this Book IT'S FREE!

SURELAY
BALANCED EGG FOOD

is composed of the very elements that the egg is composed of. Every sack of Surelay shows just what its food content is. "What's on the Sack is in the Sack and that's what's in the Egg." "Makes Hens Happy" is full of vital valuable, profit-bringing facts. Send for it today—just sign your name to the coupon attached and mail it.

List of Contents in the Sperry Book "Makes Hens Happy"

- The Business of Poultry Raising.
- How California Chickens Supply More Than Three Times Their Value in Eggs.
- Why the Pacific Coast Does Not Produce More Chickens and Eggs.
- The Most Ideal climate for Raising Chickens at a Profit. Little Capital Required.
- A Perfectly Balanced Ration for Chickens. How It Is Made.
- A Chemical Analysis of the Average Egg.
- Some Vital Points for Feeding Chickens.
- Complete Definitions Given for Each Element Contained in a Perfectly Balanced Chicken Ration.
- Conditions Necessary for Hatching.
- What Well Bred Chickens Will Do.
- Exercise for Chickens.
- The Necessity for Dry and Healthy Surroundings.
- How You Can Tell When Hens Are Happy.
- Sanitation a Big Factor.
- Formulas to Make Lice Powder.
- The Value of Fresh Water and Green Feed.
- Indication of Health or Disease.
- Vital Facts for Feeding Little Chickens.
- Hints on Fattening Poultry for Market.
- Valuable Table Showing the Food Value of All Kinds of Vegetable Food Products.

Please send me "MAKES HENS HAPPY" and Sperry Profit-Sharing Coupons.

Name .....

Address .....

Fill out corner, detach and mail to Stock and Food Dept. and we will send you a copy of "Makes Hens Happy" and FREE COUPONS ***and get the benefit of our profit sharing plan***

SPERRY FLOUR CO. Stockton, California.

ORCHARD *and* FARM

ESTABLISHED 1888

IRRIGATION

CALIFORNIA

OCTOBE

California State Libr

"What's on the sack is in the sack and that's what's in the egg"

This is Better
and Cheaper than you can mix yourself

It is almost impossible for any individual to mix together different kinds of chicken feed materials and get a perfectly balanced feed. And even if you did mix it properly it would cost you more than Surelay. Most of the ingredients of Surelay can only be secured from the by-products of the Sperry Flour and Cereal Mills, the largest on the Pacific Coast—that's one reason Surelay is low priced Quality Feed. Try

SURELAY
BALANCED EGG FOOD

and see what a wonderful difference it will make in the egg production of your hens. In the Sperry laboratories are scientists who are constantly testing grain feeds and other products for their food elements, and experts who know how to mix these ingredients scientifically into a perfectly blended and balanced chicken feed, so that there is never a question as to the exact food content in every handful of Surelay.

Look at the analysis shown on every sack of Surelay. That's what's in the Sack, and scientists state that's what's in the egg. Surelay is Egg-food.

In every sack of Surelay you will find a coupon. The more you feed Surelay to your hens the more you practice economy, for Surelay coupons entitle you to the Surelay Profit

Send for this booklet, "MAKES HENS HAPPY."

It contains some very valuable pointers on how to raise chickens and get the most profit out of them. It tells how to feed and care for them. Sign and mail the coupon to-day. Address all communications to the Stock and Food Department.

Please send me "MAKES HENS HAPPY" and Sperry Profit-Sharing Coupons.

Name .....

Address .....

SPERRY FLOUR CO. Stockton, California

ORCHARD AND FARM

IRRIGATION

Vol. XXVI OCTOBER, 1914 No. 10

The Results of Co-Operative Buying

There is a Farmers' Club, incorporated, at Ukiah, Mendocino county, that is the biggest thing of its kind in California, for while other farmers' organizations have met with wonderful success in selling the goods that farmers produce, this organization has met with even greater success by purchasing for its members groceries, hardware and all of the many kinds of goods that the farmer and the farmer's wife need. Various California growers' associations purchase fruit packing material, poultry feed and such things for their members at cost price, but usually this is an incident to the marketing of farm produce and the assortment of goods purchased is small. The Ukiah Farmers' Club, Inc., is strictly a commercial organization, and the main business is buying, not selling, though selling has come in as one part of its activities, as buying has come in as part of the work of many California marketing organizations.

To tell of the club, its history and methods, will take more than one issue of this journal, but it merits the space, for it is sincerely to be hoped that it is only a question of time before just what is being done at Ukiah will be done elsewhere all over California, and likewise, when a farmers' organization gets to work and succeeds, and so many of them have so much trouble, external and internal, in getting along at all, there is something worth telling.

Ukiah is the county seat of Mendocino county. It is located on the Russian river, 100 miles or more north of San Francisco, in the center of the Coast Range mountains. The country has been long farmed with farming of a more diversified sort than can be found over most of California. Some grain is raised, but just about enough for local demands, and some stock is kept on hills and in the valley. It is a part of California where corn is a common crop and a good one. Hops are raised in large quantities, also prunes, Bartlett pears and, of recent years, wine grapes. In fact, these four crops are perhaps the most important of the district.

The First Club.

This club, in a different form than it is at present, was started only with the buying idea as one of several features. Its main purpose was to develop the agricultural interests of the community as a kind of farmers' chamber of commerce, also to get the farmers together, socially and otherwise, and to promote better farming methods. C. A. Bernard, the present manager, was one of the leaders of the organization and has been secretary both of the original Ukiah Farmers' Club and the present Ukiah Farmers' Club, Incorporated. The first was simply a farmers' club, organized in the spring of 1911; the latter is a business corporation.

Like most great organizations, it had a small start, commercially. Retail prices of lots of goods were higher than the farmers believed they should be, and when a member wanted some special tool or lot of goods that he thought he could get cheaper through the club than at a store, he brought the money to the secretary, Mr. Bernard, who sent to the wholesaler for it, if the wholesaler would sell. The buyer then paid only wholesale price plus freight. Mr. Bernard was teaching commercial subjects at the high school at the time, doing this work only on Saturdays and afternoons. That was the extent of the buying business until the farmers incorporated in 1912, but in the meantime there were some interesting developments.

No Money in Eggs.

The club, as a public-spirited organization soon took up the cudgels for the egg producer. The situation was interesting, but not satisfactory. Grain and feed could be obtained only at the town mill, and could be paid for only in cash, not in trade. Eggs could be sold only at the groceries, which would not pay in cash, but only in trade. This was by agreement between mill and groceries—one would sell no flour, the other no grain. Likewise express on eggs to San Francisco was 60 cents a case, which practically stopped egg selling that way. The farmer with eggs to sell was in a position where he had to pay cash for the feed his fowls consumed and with the egs from his fowls he could get no cash, nothing but groceries. He was, indeed, between the devil and the deep sea, until the get-together spirit of the club got into action.

The members with fowls to feed and eggs to sell got together and organized a more or less informal poultrymen's association. Individual freight shipments were out of the question and express rates on eggs prohibitive, so all shipped their eggs together to the Santa Rosa Poultrymen's Association and got regular egg prices, less freight. That killed whatever express business was done and finally made the express company reduce its rate to 39 cents a crate, which was a fair price, thus removing the main object for shipping in union, and permitted poultrymen to keep their eggs separate and sell direct in San Francisco or elsewhere.

It did more, it so cut off egg supplies from Ukiah groceries that it made them pay cash for eggs and helped the farmer that way.

The members of the Poultrymen's Association also turned their attention to grain and feed. They figured up that if, instead of each man buying a few sacks of wheat or bran at full retail price, they would put their orders together to make fifteen tons they could get wholesale prices and carload freight rates. They had two days to unload the cars and each member ordering could come down in that time and take away his part of the order. That caused the feed problem to melt away and egg producers, instead of getting the worst of it coming and going, got the low prices coming and high prices going, all of which is right and proper and eminently satisfactory. One trouble was straightened out.

Wine Grapes on Blind Faith.

Some work of the Ukiah Farmers' Club gave a happy ending to a critical situation for wine grapes. Ukiah lies north of what was once considered the limit of successful grape culture in the coast counties, although a few wine grapes were grown. Several years ago one of the big wineries to the south wanted a few grapes from Ukiah and contracted for the output of a small vineyard at excellent prices. At once the word went out that so-and-so was getting lots of money for his grapes, and everybody with suitable land planted grapes, with the expectation that they were going to get good prices, too.

Then all the acreage started to bear at once. The company with the contract had all the grapes wanted and would not buy more at any price. Other big wineries all believed that the grapes were too sour to make good wine, a small local winery could not handle the product and the grape growers were strictly up against it.

At the club meetings, where all the problems were discussed, there was a thought of starting a co-operative winery, but it was decided that this would be throwing good money after bad, as nobody knew anything about wine manufacture, there was no selling agency nor established trade, the wine would be considered different from other wine, just as the grapes were considered different, and the growers would have the expense of manufacture without being able to sell what they made. Possibly they would even try to drink it themselves, which would be bad indeed.

Although the wine companies did not think much of the opportunities of the district, officers of the French-American Winery at Healdsburg were induced to come up and investigate and were so well impressed with conditions that they erected a winery and made five-year contracts at good prices. Thus another industry was turned from failure to success.

The Real Start.

This work was done by the old Ukiah Farmers' Club. Besides this kind of work and the educational and social meetings, those members who wanted to do some direct buying took their money to Mr. Bernard as secretary and he sent to the wholesaler for the goods. Meanwhile the trades people in town were objecting to this direct buying and to the growing sentiment in favor of organizing a buying agency and got pressure to bear to make the secretary either quit his club work or quit his job at school. As a result, in the summer of 1912, instead of merely keeping on in the old way, the members of the club decided to go into the buying business systematically. They retained the name of Ukiah Farmers' Club, but incorporated the new organization, and Mr. Bernard gave up his school work and on July 1, 1912, entered the full employment of the club as secretary and manager.

The club has grown in these two years from almost nothing, or just the simple buying told of above, to do a business of $12,000 a month, plus a big lumber business, over $12,000 worth of goods being purchased for members and others in August 1914, and it is growing so fast and so many new features are being added continually that the only difficulty is in catching up with the growth.

The biggest feature of the whole proposition is that the club has started without capital and is run without capital. Practically all business is done on credit, and the assets of the club, above liabilities, are much less than the value of real estate and permanent equipment owned. The club could not exist in its present form if a prompt payment method of doing business with all its members were not strictly followed, and the common farm way of letting bills drag is so expensive that club prices never could be made if it were not that the members did not have to pay promptly for everything they get.

Capital and Organization.

This Ukiah Farmers' Club is strictly a business corporation, organized as such, and not as a co-operative, non-profit concern. It has no shares of stock, but connection is obtained by membership fees and dues, as was the case with the original club. The membership fee was set at $2, and in addition members paid 50 cents a month for the privilege of membership. That was a pretty small capital to work up a business such as is now done. There was also once an assessment of $10 per member for permanent improvements, and the value of the property per member now is $25 or over, plus dues, so new members are required to pay an entrance fee of that amount. Otherwise everything has been done on a shotstring—that is, on credit.

There was, however, this support to credit. The club was incorporated for $25,000, and if it had gone to pieces creditors would have been protected to that amount, even if there was no paid up capital.

Business can only be done without capital through the practice of wholesale house of giving 30 to 60 days for the payment of goods. Goods are now bought in advance of orders, but the stock is continually turned over and kept on the move. Members buy and pay for goods before the 30 or 60 days is up, no capital is needed and bed rock prices are possible.

Members are expected to pay cash, though payment within ten days is considered cash. If they run over ten days, 2 per cent additional is charged. This is because 2 per cent discount is given by dealers for prompt payment, so the goods actually cost 2 per cent less to the club if payment is made at once than if it waited 30 days before paying the wholesaler. Then if members permit a bill to run 30 days, a penalty of 6 per cent is levied, not as a means of making money for the club, but as a method of making prompt payments.

The organization simply could not do a credit business without being paid promptly itself, and when farmers delay paying their bills they simply add to the cost of the goods they buy. The blame the retailer gets is blame frequently the farmer himself deserves. For example, the 2 per cent discount given for cash by the wholesaler is 24 per cent per year, which is pretty heavy interest, and the retailer has to pass it up to his customer or lose money.

Occasionally some special goods are bought on longer time, such as burlap for hop bales, and in this case the 6 per cent penalty is not used, but for ordinary business it has to be. There are lessons in finance there.

(Continued in Next Issue.)

Live Stock Show at the 1914 California

By W. M. Carruthers

The California State Fair of 1914 is past and is now history. Whether it has been a success financially or not, the fact remains that a splendid effort was made to get together the different resources of the State, where they could be seen by the thousands attending the fair during the middle week of September.

The livestock exhibit this year was one of the largest in numbers that we have ever seen at Sacramento. There was a grand total of 1,644 entries in all classes—swine, sheep, goats, dairy cattle, beef cattle, horses, jacks and ponies. In many of the entries the number of specimens were larger than the above figures indicate, many of the exhibitors having animals along for sale purposes.

A great improvement over other fairs was the system of judging the livestock exhibits this year. Almost every branch of the industry had a separate judge to do the work and by Tuesday evening the ribbons had almost all been tied. This is a mark in the right direction for the fair management, as the usual custom has been that many livestock men did not visit the fair till almost the last day on account of the judging being dragged along the whole week. This relieves the anxiey from the men who are exhibiting and gives them four days to transact any business that should come their way.

The beef men are entitled to a practical judge, all credit being given to university professors, nevertheless a practical Shorthorn or Hereford man should be employed to tie the ribbons in these classes. There are hundreds of these men in the Eastern and Middle West States who would do this work for almost nothing. If one will follow the greatest livestock shows in this country and ascertain who is doing the judging, it will be found that only men who have made a success in their respective lines are doing the work. No man can judge all classes of livestock and the California State Fair has now reached the point where every branch in the livestock industry is entitled to a judge who knows the specimens of the breed that are best required to fill the eye of our present day livestock men.

The superintendent of the different branches of livestock should be made a feature of the State Fair. There are now many associations in this State organized for the purpose of advancing the breed for which each association is formed. All these associations have practical breeders for their secretaries. It is the duty of the secretary of the State Board of Agriculture to co-operate with these respective breed secretaries and put into their hands the superintendency of the breed they represent to handle during the State Fair. This secretary would not only be an able helper to the State Fair secretary, but during the entire year his strength and co-operation amongst the breeders would help to enlarge the exhibit of this breed at the fairs. This is one of the secrets of the success of the great State Fairs which are held annually in the Middle West States of this country.

Our University Farm at Davis has five or six able professors working in the animal husbandry department who should be used for livestock superintendents at the State Fair and by continually employing the same men in the same departments the annual show could be doubled in livestock exhibits. These livestock superintendents should be given full power to reject any exhibit which they consider not up to the standard of the breed they represent.

The culling process should be handled by one who knows how to do the work.

Charles Paine, the present secretary of the State Fair, has a warm spot in his heart for the livestock man. The livestock man also loves Charlie Paine. If the State Board would give him a free hand, no one is better equipped to build up the stock exhibits at the State Fair than he is.

The herdsman's prize for the best kept stalls during the entire week of the fair is a splendid thing and the board is to be complimented for starting such a plan.

This year much livestock was on hand not for exhibit, but for sale purposes. This sale stuff crowded the nurse cows belonging to the beef men to a place where they had no protection from the sun. The breeder of beef cattle who makes the show yard part of his business cannot make a success without using nurse cows. You hear the cry from some men that they are not required. Visit the home of that man and you will find that many of the best registered cows are being used in the dairy on account of having lost their calves. It is just as necessary to protect these nurse cows and give them comfortable quarters as it is to give the best show animal a first class barn to stay in. If the management is going to neglect this part of the beef business it will in time detract from the beef exhibit.

If the breed association secretaries were accepted by the State Board to take charge of the show of their respective breed at the State Fair, the futurity classes could be made quite an object in increasing the number of exhibitors. At the Iowa State Fair this method has gained great popularity and this year much of the credit to the large rings of young things shown was due to the futurity stakes given by the "Chicago Livestock World."

The State Board of Agriculture having now placed the dates of the fair a month later than usual, it should be their purpose to see that the majority of the county or district fairs are held prior to the State Fair. This is a State of great distances and the only feeders to the State Fair is through these county or district fairs. If such a plan could be worked out and have a general roundup of all the smaller fairs at the State Fair, what a display of livestock Sacramento would exhibit for the thousands of spectators in attendance!

The exhibit of hogs at the fair this year numbers between four and five hundred, but the same old buildings are still in evidence. This is one of the new improvements which is much needed at the fair. Usually fair week at Sacramento is a hot one and many exhibitors do not care to bring their best hogs, taking chances in losing some. A hog barn built along the same lines as the Iowa State Fair would be a great help to the hog industry of the State. This is an industry which needs fostering and the State Fair must do its duty. The Iowa hog barn is more or less of a large roof laid on concrete pillars, allowing the air to get in and circulate from all sides. This class of barn is also used in the Middle West for the big sheep exhibits which come to these fairs.

A splendid idea for a get-together movement among livestock men would be to hold all annual meetings pertaining to the different breed associations at Sacramento during the week of the State Fair. Some place on the ground ought to be set aside for this purpose and used every night by the members of one of the breeds. As the State Fair is really the rounding up livestock exposition in this great country, it should be used much the same as Kansas City and Chicago are used for holding meetings by the livestock men. It is not necessary that at these meetings a general programme be given. The work ought to be the election of officers and a discussion of any subject vital to the breed's interest.

This year the directors of the Iowa State Fair decided to cut down the purses for the racing men and make this sport only a secondary attraction at their fair. Many objections were rushed into the board that the attendance would be cut in two if such a plan was adopted. Nevertheless, the board stood "pat" and the result tells the tale. The attendance was equal to that of last year, although several nights during the fair terrific thunderstorms prevailed and was the means of keeping many away on account of bad roads. In the livestock department at the Iowa Fair the entries were larger than have ever been known. In fact, the Shorthorn and Hereford classes were larger than at the In-

Advance of the Holsteins in Livestock Parade 1914 California State Fair.

Grand Champion Rambouillet Ram "Yolo Chief," Owned by Bullard Bros.

State Fair---Possible Changes Suggested

ernational last year. Perhaps our tate Fair is not ready to adopt the ame plan as Iowa, but just as sure s California is a State the day is oming when racing must be made a econdary consideration and the great gricultural and livestock interests

Part of the Percheron Procession in State Fair Livestock Parade.

of the State placed first.

The California Board of Agriculure, with its mixed board of directors, welve in number, is at a disadvanage in the way of benefiting the State Fair. There are too many men repreenting varied industries who are apt o clash at their meetings. The Oregon State Fair has only five directors, ach one of them being practical.

None of the Eastern fairs figure on he board of directors as helpers to uccess. The president and the secreary are the whole show. Spokane's nterstate Fair, the largest on the Paific Coast and the best run financialy, with no State aid, is managed by hree men. John L. Smith, its presilent, is a practical livestock man; Robert Cosgrove is its secretary, an Eastern man raised on a farm, and Professor McDonald of the State Uniersity is the third member. Cosgrove is the only paid man in the unch and has only a stenographer or thirty days out of the whole year. Some day, perhaps, California's State Fair will get down to earth and be un as a business proposition.

Holstein Cattle—The Holstein exhibit was a credit to the breed. The Morris people of Woodland were again to the fore, winning both grand champions. The Vina herd, owned by the Stanford University, made a very creditable exhibit, winning junior champion by one of the females bred at the farm. Their "King-of-the-Pontiacs," aged bull, hardly developed to the form he will have at maturity, was a worthy competitor to the Morris grand-champion. In another year when the few prominent bumps on him are smoothed out he will be a hard nut to crack in any company.

Shorthorn Cattle—The Shorthorn exhibit this year was not as large as it should have been, although many of the rings were well filled and the contest keen. Better Shorthorns have been seen at the State Fair, but in all, the general exhibit was fairly representative of the breed. T. S. Glide of Davis got away with a lion's share of the ribbons, although the other breeders contested keenly for them. The four exhibitors were T. S. Glide of Davis, the Howard Cattle Co., Newman, Hopland Stock Farm, Hopland, and T. B. Gibson of Woodland.

Hereford Cattle—The display of Hereford cattle at the fair this year was not what this great grazing, fleshing cattle deserved. The Simon Newman Company from Newman had the only herd on the grounds, except one animal shown by the State Farm. This lone young Hereford, bred and raised at the State University Farm at Davis, should be ample proof to demonstrate to the men who do not approve of fitting for the fair that like will get like. Her grandmother, was the grand champion female at the Lewis & Clark Exposition held at Portland, Oregon; her mother a grand-champion at the California State Fair and now she in her young form has proved to junior-champion. The Simon Newman exhibit looked well and were up to their last year standard of quality. Their "Beau Donald" herd bull has improved wonderfully during the last year and would make a splendid show in almost any ring of Hereford cattle. The field for new herds in this breed of cattle is becoming more and more apparent every year. Just why there are not more Herefords is hard to understand. It may be our stockmen consider it too far to go to one of the National shows and look at the great array of these cattle exhibited there. Next year at the Panama-Pacific the Hereford men are expecting to make a great display at the Panama-Pacific and give the people of the West an opportunity to see the development this breed has made in the last quarter of a century.

Jersey Cattle—The Jersey breeders made an excellent showing this year. There were a large number of herds represented and the awards were well distributed among those that went to California. The big proportion of the prizes, however, went to an Oregon breeder, C. P. Hembree, Monmouth, Oregon, who took all the championships and a liberal amount of the leading prizes. If California breeders expect to keep up to such show ring competition, some wonderful animals will have to be imported or bred, notwithstanding the present high quality of California Jersey cattle.

Guernsey Cattle—A feature of the dairy show was the display of Guernsey cattle made. A few years ago there were only a few herds kept in California or shown at the fair. This year there were quite a number of exhibitors, several of whom had not shown before, and most of the herds were very well balanced in numbers and quality.

The Dutch Belted and Red Polled exhibits were from California and were up to the usual standard.

Hogs—The swine department was well represented by the different breeds of hogs. Most of them were very representative of their respective breeds. In the Berkshire classes A. B. Humphrey and F. W. White had especially fine herds. The awards among Poland Chinas and other breeds were more evenly distributed. Some day when the hog department is fixed up and the accommodations are better than they are now, many more hogs will be seen at the State Fair. This great industry needs encouragement and it is to be hoped that the fair management sees this.

"Inka Tritomia 2d," Grand Champion Holstein Cow, Owned by James McGillivray.

Sheep—The sheep exhibit was small, but what there was, was very good. The Shropshire classes were keenly contested by the Bishop Bros. of San Ramon and T. S. Glide of Davis, Cal.

Horses—Many good draft horses were on the ground, mostly Percherons and Shires, the Clydes and Belgians being represented by only a few individuals. The Percheron entries were of a high order and the awards were well distributed. The grand championship was won by Londricitos, of the Whitehall Estate, Tracy, imported last year by McLaughlin Bros. The grand championship of the Shires was for the first time won by a home bred horse, Salvador Forest King, owned by Henry Wheatley.

Milking Contest.

In the aged cow class at the milking contest Miss Blaney of the A. W. Morris herd won with 337.3 pounds of milk, 13.352 pounds fat. Morris cows also took second and third, a Jersey cow of the Miller herd running a good fourth. In the 30-month class Queen Segis of Norwood, owned by Frank Hatch, won by a good margin with 313.7 pounds of milk and 8.98 pounds of fat, being the second highest cow, any age or breed, in the contest. A Jersey of J. P. Thorp was second in this class.

The Morris cow, Cobossie K. Queen De Kol, won in the class under 30 months, with 227.5 pounds of milk and 6.933 pounds fat. Jerseys being second, third and fourth.

Groom Contest.

In the prizes for best kept stables the Dunham-McLaughlin Co. took first and T. D. McLaughlin second for horses; Simon Newman first and Stanford University second among cattle; Oak Grove Dairy Farm first and W. A. Young second for swine; Bishop Bros. first and T. S. Glide second for sheep.

The California Associated Raisin Company, the growers' organization dominating the raisin industry of California, has decided to increase its capital stock to $2,500,000, which makes it much more than a "Million Dollar Corporation." The company is starting the new season with an exceptionally strong position.

Commercial Aspects of Almond Production

Just about the biggest problem for the man who expects to plant an orchard is to get something for which he is sure to have a sale, and a sale at a good price. The other essential is to select a fruit that will produce well in addition to selling well. With the combination of a good market and good production there is little more to ask.

As far as the almond is concerned in California the market is assured from every possible viewpoint and the prospective planter can be more than satisfied in that important point. For the second matter, the almond, above almost all fruits, is very irregular in bearing and particular in location if it is going to give commercial satisfaction. Getting the right location, and giving the right care, and the almond can well be welcomed with open arms over a wide area in California. It deserves far wider attention than it is being given, and much closer attention, which fact we will proceed to try to demonstrate.

The reason for a good proposition like the almond being neglected beyond its deserts is its irregular bearing and general flighty disposition, which makes it hard to manage. Most people get disgusted with things that are finicky, temperamental and hard to manage, and don't try to understand them or to cater to their whims and fancies. The result is that they do not do justice to the subject or develop it to its normal capacity.

That is the way it is with the almond. The almond is a tree that won't steady down to consistent bearing, so people give up planting it much more they should, and after it is planted they won't coax it along properly. It is perfectly true that the almond, even under the best of care and conditions, won't steady down and produce at all regularly, say like the very near relative, the peach; but it will steady down a whole lot more than it does when given better attention than it is given now, and selling prices and cultural conditions make it an extremely good proposition.

There is one thing about almonds—you don't have to figure on regular bearing to come out well, much as regular bearing is desired.

For this same irregular bearing is due to neglect of one of the greatest almond enemies, the red spider; also neglect in pruning and possibly neglect of cultivation and irrigation. The consequent result is that the almond becomes still more unsatisfacory, whereas better understanding of almond requirements and better care would partly overcome the very things that cause neglect at present. The red spider especially should get more attention. It should be understood when anything is said about a lack of appreciation of the almond that this nut is appreciated greatly and is making rapid strides recently; it only is not appreciated as much as it deserves.

Markets.

For the market it is unwise to occupy space by saying much, for the case is too clear in its favor. The almond, among nuts, stands alongside of the walnut for popular use and favor. Of all the United States, California is the only State that counts as an almond producer, and in California plantings have to be made with care as to location, so that there is no fear of too heavy production through large plantings, either within the State or without, for decades to come.

California produces approximately 2,200 tons of almonds per year. In addition the United States usually imports more than 8,000 tons from Mediterranean countries, and, as is the case with most agricultural products, nothing is done to expand consumption except what some growers' organization does. Even with no necessity for finding a market the present California Almond Growers' Exchange is doing a great deal to develop popular favor with this nut, and in the distant future, when production equals present demand, it will be found that the demand will have advanced to make still further production necessary. It can be safely stated that the almond commercially has a future safer far than any person has a right to ask for before planting any fruit tree.

There are just five standard varieties for the market which a person is justified in planting. These are the paper shell or Hatch varieties: Nonpariel, I. X. L. and Ne Plus Ultra, all developed in California; also the soft shell varieties: Drake's Seedling and Texas Prolific. Other kinds found in the market are either from old trees no longer planted, or are varieties for some special characteristics and planted only occasionally.

These terms soft shell and paper shell should be understood by the amateur, as they will fool a person who don't know what they mean. It is like the terms choice and standard in trade. Standard, you would think, would mean of good average merit, and choice something pretty nice. Instead standard is the poorest in quality of the regular grades, and choice only the next best. When you want something real good there are several grades still better to select from.

Similarly soft shell almonds are the hardest to break into of those commonly found in the market. The real hard shell almond hardly is grown at all and needs a hammer to get into. The paper shell varieties are the kinds commonly considered soft shell. They have the thin shell one can open with his fingers, far more meat in proportion to selling weight, and are the nuts of real merit and quality. In appearance they perhaps are not as ornamental as the rounder, smoother, more golden shell nut, but they are far better for the buyer, all of which relates to the ultimate consumer's insruction, not that of the would-be producer.

Pollination.

When a person contemplates almond planting he must ordinarily plant both soft shell and paper shell varieties, and this for several reasons. The most important of these is pollination, as an essential for decent production. There is lots to learn about pollination in fruit growing, but we know more on the subject as it relates to almonds than we do of any other fruit. Almonds utterly refuse to bear properly when there is only one variety. Two helps some, and the more the merrier; likewise other. It used to be that people planted the three paper shell varieties to promote pollination, but it only helped partly. Now they plant one or more of the paper shell varieties and one of the soft shells with them in such a way that the pollen will mix as well as possible.

The natural way to do is to have two rows, or four rows, of the soft shell, say Drakes or Texas, on the side from which the prevailing winds come; then two or four rows of Non Pariel, or one of the other two varieties named; then a couple more rows of Drakes or Texas again, and so on across the field. For convenience in harvesting always plant two rows of a variety together, never single rows, unless a little more work than is needed is to be used in gathering the nuts.

Likewise it is considered safest to have either Drakes or Texas Prolific come every fourth row or so across the orchard, though in case it is desired to plant all three Hatch varieties it is perfectly permissible to have two rows of each before having the two to four rows of the soft shell. Either the Drakes or Texas can be used. The Drakes is the standard now, but the Texas, a newer variety, and a fine grower and producer and an excellent pollinizer, is coming along rapidly.

Varieties.

Of the paper shell nuts the Non Pariel is easily in the lead. It is the best nut of all in price and quality and a fine bearer, being worthy of strong recommendation under almost all conditions. The I. X. L. is next in price but not in commercial merit, for it is too independable in bearing. The rule with it is not to plant unless it does very well in your situation. Occasionally it does exceptionally well in certain localities, and the rule then is to plant it the heaviest of all. The Ne Plus sells for a little less than the I. X. L., but at a high enough price to justify high regard. At present the wisest course in general would seem to be to have two rows of Non Pariel, two rows of Ne Plus and then two rows of Drakes or Texas for pollination, as well as for their own sakes. In I. X. L. localities that variey would take preeminence.

Prices run normally in the same proportion for the different varieties as this year, the prices made by the exchange being: Non Pariel, 21 cents; I. X. L., 20 cents; Ne Plus, 19 cents; Drakes, 16 cents. All these prices are high, due to short crop and European war. The Texas is not much in the market yet and goes about the same as Drakes, or a cent lower.

The apparent disadvantage of the soft shell varieties in price is not as bad as it seems for several reasons. One is that the trees are more vigorous than the paper shells and normally much better producers, closing up the gap when it comes to net returns; another is that the blossoming is later and the blooms hardier, so that these varieties will bear more regularly and have better crops in bad years; and a third reason, which is enough to carry the day itself, is the need of a soft shell variety to give good bearing to the others. Non Pariel and the other two varieties bear much better when alongside of the Drakes or Texas than when alone.

Yield.

It has been asked how much almond trees will produce a season, which is a bad enough question to try to answer with any kind of fruit, and worse with almonds than others. The tonnage of the last few years has averaged 2,200 tons for the whole State, according to the best figures available. In 1906 and 1907 the crop was only 750 tons per year; then it was: 1908, 2,900 tons; 1909, 1,500 tons; 1910, 3,300 tons; 1911, 1,450 tons; 1912, 3,000 tons; 1913, 1,100 tons. The number of bearing trees in the fall of 1913 is given as 1,384,933; non-bearing, 678,522; which will indicate something about the amount of new planting going on. Counting 75 trees to the acre, there would be about 18,000 acres. As a good portion of the trees counted are probably in small lots, the nuts never reaching the big markets and not being counted commercially, and a good many trees are planted more than 75 to the acre, probably 14,000 acres would be better figuring for acre production. With an average crop of 2,200 tons this gives an average yield of 315 pounds per acre. That seems so low we almost wish we hadn't figured. However, at 16 cents a pound it means $50 per acre.

This proposition of figuring averages is a bad, bad business anyhow. You can't tell about figures. Then a lot of people plant who are doomed to failure on anything they touch, a lot of others plant in the wrong place, others don't attend to business properly; and the right way to plan is to plant in the right place and do things properly. Offhand we would say that half a ton per acre was a conservative estimate of average yield if a man would get in the right place and attend to business the way he should. One thing is dead sure: people that are making a success of the almond business are going ahead strongly, which is the biggest argument possible in its favor.

When planting almonds it is necessary to figure that the crops will be far more irregular than that of other standard deciduous fruits. In fact, if the almond were not so hard to suit California would not be practically the only producer in the United States, nor would the markets be so favorable. Irregular bearing and difficulty in securing suitable locations is the price paid for good markets, and, having paid for those markets, the person who can grow almonds well is far better off than if everybody could grow them.

Early Blooming.

The main reason for irregular bearing is the extremely early blooming of the almond. It comes out before all other common deciduous fruits and in addition it is delicate when it does come out. Frost will ruin the fruit germ, rains will wash out the pollen, which from previous statements will be seeen to be delicate enough as it is. Otherwise the almond is all right in bearing.

This will suggest the necessary methods for securing a good crop. The first is a good thermal situation, that is, where frost is light. A large percentage of the almonds are planted on the floor of the Sacramento valley where nothing but climate exists to ward off frosts, but where there is a little roll to the country invariably an elevation of even 10 to 20 feet above natural levels will be a big gain in assuring crops. Then there is the further step of entering the low foothills, or just where the rise from valley edge begins, in the real thermal locations, such as are for citrus fruits. This is the place that has the most to recommend it from the frost standpoint.

The question remains whether it is better to grow almonds on he level floor of the valley, where the soil is rich and deep and moisture abundant and irrigation available if required, but with no frost immunity to help assure crops, or to go higher up and have much less frost trouble but instead have poorer soil (as a rule), less moisture, less growth and less tree vigor to hold the nuts when frost does come and to mature crops when the season permits a full setting of crops. There is something to be said on both sides, and valley growers say better be on the floor of the valley and miss a few crops, but get bumper production when the fruit can set, than to have less frost and fewer nuts. Growers can take their choice.

Irrigation and fertilization in theory would put the man at the base of the foothills in the finest position for both frost, fertility and moisture. Orchard heating would in theory give the valley grower everything that he needed. Both would occasionally lose crops from heavy rains at blossoming time and from seasonal troubles beyond human control. Both orchard heat-

(Continued on Page Thirteen.)

Important Details In Citrus Pruning

There was given in the September issue of "Orchard and Farm" an account of the principles governing the pruning of orange trees as practiced with much success by A. A. Jenkins of Porterville. It would take a good-sized booklet to do full justice to the subject and many of the details of practice were necessarily omitted. It is the details, after the principles are accepted, that are the most interesting of all.

The leading feature of the pruning is, as stated, to cut back the oldish wood so as to force out new, vigorous wood growth, also to keep the tree thinned to permit the entrance of light and air. This cutting back is always to an established branch that is large enough to take the extra sap flow that the cutting back develops.

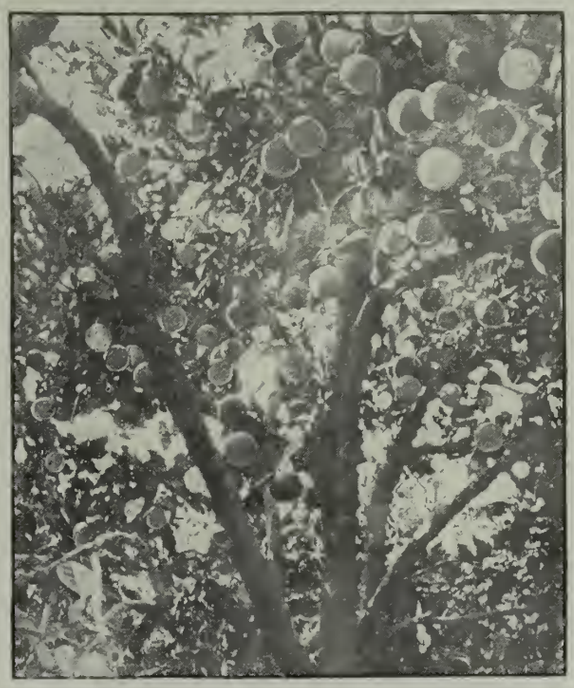
Ordinary pruning can, of course, do two things; it can send renewed sap flow, or growth, whichever way it is to be termed, into a shoot or branch already in existence, or it can be done so that new buds will break out vigorously at, or slightly behind, the point of cutting. Water sprouts, for instance, are a common result of heavy pruning. In pruning some varieties of trees some ways one kind of cutting is done and in other cases the opposite idea is followed.

The idea of Mr. Jenkins is always to stimulate the growth of an established shoot by the cutting back, not to force out new growth. Not only are the new shoots, the water sprouts, to be rubbed off when they appear, but the cutting is to be done so that few or none will develop. The latter object can be accomplished by cutting back in the right way. In twig pruning, or pruning of small stuff, it is accomplished by cutting back to a branch of equal vigor to the one cut off and normally a season or so younger, and in pruning back to the main branches it is made by cutting clear back to the point of origin. A stub is never left. It makes an unsightly wound, hard to heal, causes a bunch of weak shoots to start out on the stub and lessens the vigor of the orange tree, rather than increasing it.

When possible a cut is made flush with the branch from which the cut is made and then this heals over nicely without having a lot of buds start out. Occasionally it is difficult to cut down flush with the parent branch, and in this case the cut is always made parallel to the grain of the parent branch. Better that way than to have the cut start flush with the branch and then rise slightly. That is very bad. When the cuts are made parallel to the grain, not only will the bark grow over the cut nicely, but buds will not break out. The writer examined a number of such cuts, standing out, say, half an inch from the parent stem, but made parallel to the grain, and no sign could be seen of shoots coming out and in all cases the wound was healing over uniformly from all sides. The rule is—cut flush with the parent stem where possible, otherwise cut parallel to the grain.

There is one other thing connected with the kind of cut. When green shoots are to be removed, they are always cut off, never pulled off, except when they are so small that nothing which could be called a wound is left. If they are so small and soft that they can be removed by running one's thumb over them, that is the way to do, but when any effort is required and a tear would otherwise result, the shoot is cut. Last issue the advantages of having the inside of the tree open was described, but a few shoots in the center of the tree are permitted to develop, just as is done in the center of a peach tree. These can develop if the tree is open in the center and they make good fruit wood.

One emphatic illustration of the effect of these pruning methods is seen in the results of treating chlorosis. The principles are the same as in ordinary orange pruning, but carried to an extreme. In chlorosis the leaves yellow up, the tree becomes sickly and unable to produce good crops. (This is a different thing from mottle leaf.) There may be a number of causes, but the essential fact is that the tree loses vigor and is unable to nourish itself properly. Poor nutrition is the main cause. As it occurs commonly on soil and under conditions where the trees were strong before, not merely on account of definite reasons like lack of moisture, over-irrigation, poor cultivation, it indicates that if the trees could be made to develop more vigor they could be made to nourish themselves properly and return to a good growing, good bearing, condition, that is, where they had been doing well previously in the same place and under identical conditions. Chlorosis being caused by poor nutrition and that by lack of vigor, and vigor being encouraged by proper pruning, the theory of the thing is therefore that pruning can overcome chlorosis.



Interior of Well Pruned Orange Tree by Jenkins' Method, Showing Air Space and Much Fine Fruit.

The way that this is done is as follows: Instead of making the cutting back all at one operation, say by cutting out a whole branch all at once, or several branches out all at once, the cutting is done by degrees and the tree is nursed along as it is able to stand pruning. No big branches are cut off unles they are so far gone that they are hopeless, and then they are cut off clean, never to a stub.

From the end of a chlorotic branch a part is cut off to where a shoot of a little more than average is coming out. This is done here and there all over the tree. The whole tree is weak and unable to stand or receive much stimulation, but the cutting back stimulates it somewhat. It is very unlikely that it will green up and be perfectly healthy, but the shoots that have been growing a little will quite surely grow a little more vigorously. The smaller twigs will probably not be stimulated much and the vigor will most likely be centered on one or two shoots on each branch. Therefore, in a couple of months the pruner comes along again and cuts back the branch to a shoot that has started to be invigorated and this makes it still more vigorous. The process is repeated as often as is required, each cutting back causing more growth and reducing the leaf surface that the roots have to sustain, until finally perhaps only a foot or 18 inches of the main leaders are left and some of the leaders may be gone altogether, but there is vigorous growth of the finest green coming out. This may be starting in directions that a good pruner would never permit in training a young tree, but it has to be taken whatever way it comes, and can be bent or started off to shape up the tree according to the best system possible.

As it is stated above, it is all theory, but as done it is fact, as can be seen by trees in various stages of treatment. Alongside of some can be seen chlorotic trees on which an attempt was made to stimulate by dehorning, or cutting back to stubs. Invariably such dehorned trees have only a small amount of growth coming from the stubs and that was yellower and weaker than on the untreated trees. Dehorning of citrus trees to cure chlorosis is a blunder, while cutting back by degrees to stimulate growth proved effective. So much for chlorosis.

A practice that should be strongly condemned on normal trees is the cutting back of all shoots that project beyond the normal wall of the trees. This is bad for several reasons. One is that the tree naturally expands by such growth rather than by an extension of the small branching twigs that provide the main part of the leaf wood. Cutting back good fruit shoots simply holds back the tree and it never has the opportunity to be more than a runt.

Another evil is that the cutting off of a vigorous branch makes it send out a lot of young shoots which help form a dense wall of leaves, shading the interior of the tree and crowding outside growth so fast together that it becomes weak and unthrifty. Thus the cutting back of good shoots that are attempting to go beyond the natural wall of the tree merely serves to hold the tree down in size and likewise weaken the growth that is left.

One other special case in pruning is the handing of cross branches. Cross branches will not occur if a tree is brought up in the way it should go, but all trees are not brought up that way, and occasionally there are cross branches which cannot well be removed. The harm from cross branches comes from the cutting off of the sap flow on account of the pressure across the bark. Pressure lengthwise along the bark does not stop the channels along which the sap passes, therefore plugs or wedges may be put in to touch the branches lengthwise and hold them apart and the branches will be as strong as if they were clear from interference. The proposition is to put the plugs in so that they will force the branches apart, but press on a narrow strip of bark lengthwise instead of crosswise.

Gummosis has been a serious and difficult thing to combat. The standard treatment is to cut off all diseased wood and bark down to clean, healthy tissue, painting it with Bordeaux or some such material with fungicidal value. Mr. Jenkins has a material of his own preparation, but has one feature in cutting that is valuable, that is to cut to a point in the bark above the former gummosis, rather than to cut roundish. When all bad bark and wood is removed and there is a clean, smooth surface left and the tree starts to recover, the bark begins to grow back over the wound. The bark will grow sideways quicker than downward. If the upper part of the wound is curved, the bark can only grow straight downward, except from the growth away at the side, and downward growth is slow. If the cut is made to a point, as an inverted V, it grows from the side and meets and continues more rapidly than it would on a curved surface.

In cutting off large branches, Mr. Jenkins strongly condemns the use of paint to protect the cut, on the ground that it poisons the wood and weakens the tree, likewise on the ground that a good, clean cut, save on a stub, which never should be left, will heal over rapidly and cleanly anyway, a point that there were a number of illustrations to substantiate.

There is one thing about all such details. More is learned and appreciated on the subject in a day's actual thought and practice than in a fortnight's thinking without practice. The matter of details could be extended forever, but it can only be learned by practice and theory together.

FERTILIZER BULLETIN

The Agricultural Experiment Station of the University of California has issued another bulletin reporting upon Commercial Fertilizers examined by the California Fertilizer Control for the year ending June 30, 1914. This bulletin gives a list of fertilizers offered for sale in California and the names of manufacturers thereof. According to the sworn statements of dealers registered for the fiscal year ending June 30, 1913, their entire sales in the state amounted to 37,000 tons. Incomplete returns for the year ending June 30, 1914, indicate sales of from 35,000 to 40,000 tons, which is an excellent showing under the conditions. The bulletin gives the composition of the different brands of fertilizers as guaranteed, also the actual composition as determined by analysis.

Summary of the Citrus Season

The year for citrus growers ends on August 31, for that is the date that all the navels and a large part of the Valencias are supposed to be gone and the books of the California Fruit Growers' Exchange are closed, to be opened again for a new twelve month on September 1. The report of the general manager of the California Fruit Growers' Exchange upon the work of the Exchange for the citrus year gives a very clear statement of the whole citrus industry in California for the time covered, as the Exchange is the dominating factor in the California citrus industry. Such an annual statement has been issued by the general manager, G. Harold Powell.

In this year ending August 31, 1914, 11,262,185 boxes of citrus fruits were shipped through the California Fruit Growers' Exchange. This includes 10,156,724 boxes of oranges and 1,105,461 boxes of lemons, which makes a total of 28,193 carloads. The Exchange shippers have sold 3.8 per cent more boxes of citrus fruit than in any previous year. The Exchange members have forwarded 61.9 per cent of the ctirus fruit shipped from California, which is the largest percentage of the total crop handled through the organization.

The money returned to California through the Exchange amounts to $19,246,757. This makes a general average of $1.71 per box f. o. b. for every box shipped. The delivered value of the Exchange fruit is $29,434,402.40. In one year only, 1910-11, has the amount of money returned by the Exchange to California been exceeded.

Operating Expenses.

The operating cost to the shipper who utilizes the facilities furnished by the Exchange, including the salaries and entire expense of the seventy selling agencies, the maintenance and expense of the general office in Los Angeles, the Exchange share of the expense of the Citrus Protective League and all other expenses, is approximately 4¼ cents per packed box. This selling cost represents 1 3-5 per cent on the gross sales.

In addition to the operating cost, the Exchange has expended 1½ cents per box for advertising its leading brand, or 3-5 of 1 per cent of the gross value of the fruit. This advertising expense is partly an operating cost and partly an investment for the sale of future crops. This makes a total cost of 5¾ cents per box, or 2 1-5 per cent on the gross sales.

While not a California Fruit Growers' Exchange expense, there should be added to the marketing cost 84-100 of 1 cent per box, which is the average cost which the grower paid to maintain the sub-exchange during 1913-14, making a total cost of selling citrus fruits for the Associations belonging to the Exchange, 6.60 cents a box.

This marketing cost, including the cost of advertising, is the lowest cost of marketing an agricultural crop anywhere in the world. The salary expense of the Los Angeles office, including the general manager and assistant general manager, traffic officers, attorney, cashier, sales agents and all assistants, including an average of fifty employees, is only 3-5 of 1 cent per box.

The Exchange shippers have been paid $108,428 for overcharges and breakage and damage to fruit in transit, the cost of which is included in the selling expense of 4¼ cents per box.

The Exchange shippers have been paid $343,744.88, the refund of excess charges collected by the Citrus Protective League, with interest, at the termination of the lemon rate case. The League expense is included in the selling cost.

Almost No Losses.

The business of the Exchange has been conducted for the shipper with an estimated loss of $355 from all causes, or 1-542 of 1 per cent of the $19,246,757 returned to California during the year.

Caring for Increased Production.

From 1900 to 1914 the citrus fruit crop of California increased 254 per cent. The acreage has increased 128.9 per cent in the last decade. The shipments from Florida and California have more than doubled in the same time. The Exchange organizations in order to keep the industry from ruin have had to sell their fruit wisely from year to year, and to develop a distributing and selling system and an advertising policy at the same time which would cause consumption to keep pace with the increase in production.

The Exchange has been able to greatly increase the per capita consumption of citrus fruits by advertising. The population of the United States has increased 21 per cent during the past decade; the consumption of California oranges increased 74.6 per cent during the same period. The production of California oranges and lemons is increasing rapidly and the Exchange, looking to the future as well as to the present interest of its members, is, by judicious advertising, creating a larger consumption of oranges, lemons and grapefruit. At the same time it has established for the "Sunkist" brand a national standard of quality that is a cash asset to every Exchange grower.

The members have purchased $3,319,062.04 of supplies through the Fruit Growers' Supply Company, including $2,022,482.64 of packing-house supplies, including shook, paper, labels, wraps and sundry supplies; and $1,296,579.40 of orchard supplies, including fertilizers, insecticides and fungicides, heaters, oil and other sundry orchard supplies. The supply company operates at cost at an operating expense of ¾ of 1 cent on each dollar of business transacted. The business of the supply company increased 51.7 per cent over the largest previous year.

Market Review.

As a result of the frost of 1913, California lost its commanding position in the leading markets of the country, especially in the East. Florida, profiting by our misfortune, was intrenched in the markets at the beginning of the year. California had to re-establish its citrus fruits in the markets. In addition, the year has been one of abnormal business unrest and depression, and the citrus fruit business, in common with other businesses, has lagged behind the normal rate of expansion.

That the Exchange should have shipped the largest crop in its history and should have returned the largest amount of money to the State one year after the disastrous frost, except in the year 1910-11, when general financial conditions were natural, is one of the remarkable achievements in American horticulture.

Three leading factors have made this result possible; first, the international system of uniform distribution through the seventy exclusive agencies established by the Exchange members; second, the international campaign of advertising, which increased the consumption of California citrus fruits and quickly re-established them with the consumers; and third, the luscious character of the California orange, which makes it pre-eminently popular with the consumer. Without the systematic distribution, the aggresive salesmanship and the advertising of the Exchange, financial ruin would have overtaken many growers as a result of the chaotic condition that would have followed the frost.

Essential Changes.

As citrus production is increasing to such a revolutionary extent some big market changes will have to develop in order to keep the citrus industry up to its present very profitable condition.

There will be needed a large increase in the per capita consumption during the early winter months, when the navel crop of the north, the early navels of the south and the bulk of the Florida crop of oranges and grape fruit will naturally be marketed.

There will have to be adjusted an increasing competition between northern Valencias, late southern navels, and miscellaneous varieties, such as Seedlings, Mediterranean Sweets and St. Michaels, between May 1 and June 15, when the young Valencia groves of the north come into full bearing. There will have to be a large increase in the consumption of Valencia oranges during the summer and fall months when the young Valencia groves of the south come into bearing. An increasing competition will have to be adjusted between the ripe late Valencias of the southern coast districts and the shipments of early oranges and grapefruit from Florida in October and November and with the early navels of the north in November. There will also be an increasing competition of California lemons with imported lemons and an increase in the local lemon consumption of the country.

Increasing Flow From Well

I have a drilled well 300 feet deep, water stratum between 142 and 148 feet, clay 148 to 160, 160 to bottom solid granite. This is a twelve-inch well, but supplies only twenty-five gallons per minute. I feel the same condition would prevail anywhere I might drill on my land and that it would be impossible to ge a "big" well.

What would be the best system to follow in order to obtain 150 to 200 gallons per minute? Would it be practicable to sink a shaft a few feet from the drilled well, tunnel to the casing at water level, then sink and crosscut in water-bearing stratum until pump could no longer keep the water out of the way? Or, would a number of small wells equipped with windmills and pumping to a central reservoir be a better scheme? The total lift will be approximately 150 feet.—E. J. M., Victorville, Cal.

Answer by Prof. B. A. Etcheverry, University of California.

The conditions described seem to indicate that the water supply is very limited and any method of developmen which I might suggest would be very expensive and the results would be uncertain and would probably not justify the cost. One of the means which Mr. M. suggests is to go down to the water-bearing strata by means of a shaft and from the bottom of the shaft drive underground galleries to develop additional water. The results which this would give are uncertain for the reason that the water which he now obtains from this strata by means of the one well may be all that this strata will yield. For the some reason the development of this water by using a number of small wells, equipped with windmills, would also be uncertain, although if the wells are placed sufficiently far apart, the chances of increasing the water supply would probably be better and the cost of trying this would be less than that of using the shaft with the underground galleries. In either case the cost would be so high that it may be more economical to abandon the present location and to select some location where water is more readily obtainable.

I regret very much that I cannot give you more definite information, but the prediction of underground water and estimates of the volume that can be obtained is something which no one can do unless there be sufficient wells in the immediate neighborhood from which considerable information may be obtained.

Note by Editor.

Years ago we heard a yarn that ran something like this: A certain farmer in a part of California where there was very little rain had a chance to get a lot of irrigating water one winter for which he had no use whatever, but sooner than let it get past him and go to a neighbor farther along, he took the water and irrigated a lot of land that was too dry to plant and that he did not expect to use. A number of months later he wanted to plant a crop and found that there was a lot of moisture in the soil, planted some grain or other seed and got a fine crop out of the moisture that he had put on there months before, a crop out of all proportion to the deserts of a man as mean as that. We don't know how true the story is, or whether our recollection of the case is wrong, but the practice suggested is a good one. A person with ground useless unless irrigated, and with too little water for irrigation in the regular irrigating season can store the water in the soil just as well as in a reservoir, or even better, because the water will stay in the soil and will not sink down, nor will it evaporate very much if a mulch is kept. The loss by evaporation will at all events be much less than if the water were stored in a reservoir.

Unirrigated orchards grow well and produce fine crops on rain that falls almost entirely in the dormant season. In a country of too little rainfall for crops, water from wells might be put on the land in place of the water that does not fall from the skies, and although you may find it difficult to develop a greater flow than 25 gallons per minute, it is just possible that by keeping the pump going all the year round, you may be able to farm enough land to do fairly well after all.

A flow of 25 gallons per minute will irrigate about four-tenths of an acre three inches deep in 24 hours. At that rate you could cover 36 acres 12 inches deep in the year, or 24 acres 18 inches deep, and whatever rain came in addition would enable you to increase the amount of land farmed. With 18 inches of water on each acre, you could raise almost any crop you saw fit, or you could farm a much larger area if you raised crops that needed less moisture.

It is well to bear in mind that water will not sink deep into dry soil. It will be carried down only by its own weight and when there is no more free water, but only enough to moisten the soil particles, it will not go deeper down, but will either stay there until used by plants, or be evaporated from the surface. Furthermore, by staying for several months in contact with the soil, it will free plant food that would not be freed by moisture applied at the time that plants were using it.

Winter irrigation, as you probably know, is quite common with persons who have not water for summer irrigation, or who think that the rainfall will be too small for the best use of crops. Instead of spending more money on a chance of developing more water, you possibly will get along very well by installing a small electric pumping plant and keeping it going 24 hours a day for 365 days in the year and get enough water on your land to keep you busy and to make you a good living. Then, if you want to try a windmill or so and a small reservoir to give you a head for irrigation, possibly you can get even more water than you are now figuring on. The thing is not only practicable, but practiced.

Work of the County Farm Advisers

The county farm advisers which have recently taken office in a number of different California counties are starting something that provides one of the most important features of present-day agriculture. Their duty is to take the scientific and effective agriculture of the colleges of agriculture and of our agricultural scientists directly to the farms of each county. It is the duty of each adviser to notice and point out the opportunities for improvement in farm methods, as shown by agricultural research, and to have done those things which many persons know should be done, but are left undone because it is nobody's duty to look after them.

With one exception all the county farm advisers in California have held office only a short time and their work is still largely in its organization condition. Two of these, H. J. Baade of Napa and James A. Armstrong of San Diego, have written to the readers of "Orchard and Farm," giving a little outline of what they are doing. It is only a question of time until practically every agricultural county will have a farm adviser and this will show readers the nature of the work that their future farm advisers will likely at first take up.

Napa County Progress.

From Napa county Farm Adviser Baade writes: "Last summer a great number of trees in this valley were girdled by gophers and many farmers knew of no way of checking the damage. I showed them the bridge graft and it was used with great success.

"When I started in to work as farm adviser of this county we had a poisonous weed in the upper end of the valley which was killing stock. In one six-acre pasture fifteen had been killed by this weed. This matter was called to my attention and we instantly located the weed, it being 'Sheep Sorrel.' The farmers were saying that it was wild parsnip, but there was no wild parsnip in the field, consequently it could not be doing the damage, so this was not very difficult to work out.

"At present we are working on various problems, the results of which are not definite enough to publish. The organization of the Farm Bureau is practically complete at this date. Last Monday we had made arrangements with Miss Clark of the university to meet the ladies of the Carneros Center, and thirty-six were present for the Farm Center meeting. We have at present twelve of these Centers organized, and one more will be organized this coming Saturday night, September 19. After that I shall probably have to combine some in order to accommodate those centers in another part of the valley which are at present not receiving attention.

"The Farm Bureau will have its first county meeting at the Napa Pavilion October 3, at which time we expect to have 1,500 or perhaps 2,000 farmers present. Speakers from the university will give demonstrations with machinery. The wine men will be here to present their case. The merchants of Napa will give a barbecue and a band will furnish music."

Attack on Weeds.

Very naturally what is told of is merely an item or two of the work. So is some weed killing which Farm Adviser Armstrong tells of. This work is being done in the vicinity of Encinitas and the object is the utter eradication of wild morning glory and Johnson grass. The suggestion that they be fought was born of necessity, as all good things usually are, and the movement came from the people themselves in that locality.

"The plan is something like this," writes Mr. Armstrong:

"The majority of farmers represented by the Encinitas local of the San Diego county farm bureau realized the necessity of cleaning up their land of these two pests, which, as you know, prevent the growth of profitable crops in the infested spots. They have asked the co-operation of the County Horticultural Commissioner, who is empowered to assist in the eradication of noxious weeds when they prove to be a menace to the agricultural development of any county.

"At this time a survey has been made of the district, showing in detail every spot having any of these two plants growing upon them. The clean-up work will be done under the strictest kind of supervision by a special inspector appointed through the Horticultural Commissioner's office. If the rancher himself wants to do the work it will be entirely satisfactory, so long as the work itself is satisfactory, but any time that the work is not done right it will be finished in a satisfactory manner and charged to the land, as is amply provided by law. There will probably be two men with teams employed constantly to go from one ranch to the next and cut the plants at the time when they should be worked for the highest efficiency."

Mr. Armstrong calls special attention to the co-operation of the County Horticultural Commissioner. The County Horticultural Commissioners are indispensable to the horticultural interests of every county and in San Diego the commissioner and the farm adviser work in the same office and as their work is similar along some lines, they co-operate in every way possible.

If any person is interested in insect study and wishes to make a collection of insects, a new Farmers' Bulletin, No. 606, can be had on application to Washington, telling how best to collect and preserve insects. It is of especial value to teachers engaged in teaching nature study.

Buy Roofing as You Buy Seed

YOU wouldn't think of buying seed from a company you knew little about or because of low price —

You have too much at stake to take a chance—*you must be sure of results!*

Roofing — like seed — is only safe to buy when offered by a company in which you can place absolute confidence.

J-M ASBESTOS ROOFING
"The Roll of Honor"

is manufactured by a concern that has been in existence for over half a century — that has a reputation for honest dealing that is country-wide and has never been known to willingly permit a single customer to be dissatisfied.

J-M Asbestos Roofing is made of the best materials that money can buy — fire-resisting and practically imperishable pure Asbestos fibre and Trinidad Lake Asphalt — the world-famous water-proofing. It never needs coating.

J-M Regal Roofing has proved its merit through years of dependable service.

J-M Transite Asbestos Shingles give you a fireproof stone roof that is artistic and permanent.

Write nearest branch for Samples and Booklet No. 4397

H. W. JOHNS-MANVILLE CO.
Manufacturers of Asbestos Stucco; Pipe Coverings; Cold Storage Insulation; Water-proofing; Sanitary Specialties; Acoustical Correction; Cork Tiling, etc.

Albany, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Indianapolis, Kansas City, Los Angeles, Louisville, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Syracuse 2744

JOHNS-MANVILLE SERVICE COVERS THE CONTINENT

THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED
Toronto Montreal Winnipeg Vancouver

RECRUITS WANTED

READ THIS LETTER

It has been a little over 3 months since I purchased my

SAMSON SIEVE-GRIP ORCHARD TRACTOR

from you, and I thought frequently of writing to tell you what I have accomplished with it, and how pleased I am with results.

Your first demonstration hauling Navels convinced me that you had a wonderful engine, and so you have. Your engineer, Mr. Gum, and I rigged up two wagons and hauled 180 boxes of fruit, and at no time were we compelled to drop the trailer. This hauling was done before plowing my cover crop.

My next work was with an 8 ft. double disc harrow. On one 20½ acre piece I disced against time and covered it in 4 hrs. and 2 min. This was the fifth time over the piece for the disc harrow. I used 18 gals. of distillate and 3¼ qts. of oil. Am now using a 14 tooth Gooseneck cultivator, with 2 inch shovels on it, and find it a much heavier lug than I expected, but it has at least 300 pounds of weight on it.

Last week I hauled fruit with my own wagons and put 104 boxes on each wagon, making 208 boxes per load and had no trouble making 3 trips a day and brought empties back each time. It is 2.8 miles from my North orchard to the packing house. Last Saturday I made 3 trips of 208 boxes each, and one trip of 110 boxes, a total of 734 boxes. I did not get my first load until 9 A. M. and had my last load at the packing house at 5:45 P. M. I formerly made two trips one day and 3 the next with 4 horses and only 110 boxes per trip. Previous to this year I have hired teams to haul my fruit at 3c per box, so you can see what my last day's work would amount to, $22.02.

In hauling, my tractor consumed about 18 gallons of distillate and four quarts lubricating oil, total $1.50. One man at $2.50 per day, making about $4.00 for the heaviest day I had. I do not figure my time as anything, but you may allow me $5.00 per day if you wish and still I am money ahead. That would mean practically $9.00 compared to $22.00 for hauling 374 boxes at 3c with horses.

I have always wanted to do my own cultivating, but was not able to until the

SAMSON SIEVE-GRIP ORCHARD TRACTOR

came to my rescue, and has been the "strong man" on the ranch ever since. Trusting this may be of interest to you, I remain, Very truly yours, (Signed) N. FRANK MORSE.

For description, specification, photos and pictures of the DUST PROOF Samson Sieve-Grip TRACTOR, a TRACTOR that CANNOT PACK THE SOIL, write for catalogue O. A.

SAMSON IRON WORKS **STOCKTON, CALIF.**

The Cost of Hog Cholera Insurance

By Prof. J. F. Mitchell, University of California

Three items enter into the cost of insurance against hog cholera: The cost of administration of anti-hog-cholera serum; the cost of the anti-hog-cholera serum, and the value of the hogs that die on account of the injection.

The cost of the administration of anti-hog-cholera serum depends on

Prof. J. F. MITCHELL.

the veterinarian's fee and the ease with which the animals can be confined and handled. The veterinarian's fee ranges from 10c to $1 a head for small herds and from $15 to $30 a day for large herds. Some farmers have received special instruction and now do their own injecting. As a rule it is cheaper for the farmer to hire a competent veterinarian to vaccinate his herd rather than to do it himself, because the increase in the good results obtained by a man trained in the use of vaccine more than equals his fee.

The cost of the anti-hog-cholera serum and the length of immunity that can reasonably be expected to follow its use can be reckoned from the following table, taken from circular 106 of the University of California Agricultural Experiment station:

	Serum alone		Serum & virus	
	Length of immunity	Cost	Length of immunity	Cost
Suckling pigs, 2 to 5 weeks old	3 to 6 weeks	$0.30	3 to 6 months	$0.51
30 to 50 pounds	3 to 9 weeks	.50	6 to 12 months	.71
50 to 100 pounds	3 weeks to 6 months	.60	10 to 18 months	.91
100 to 150 pounds	3 weeks to 6 months	.80	1 to 2 years	1.22
150 to 200 pounds	3 weeks to 6 months	1.00	1 to 2 years	1.52
200 to 250 pounds	3 weeks to 6 months	1.20	1 to 2 years	1.83
250 to 300 pounds	3 weeks to 6 months	1.30	1 to 2 years	2.04
300 pounds and up	3 weeks to 6 months	1.50	1 to 2 years	2.34

It will be seen from this table that suckling pigs can be immunized for three to six weeks with serum alone at a cost of thirty cents. This immunization will usually carry a pig through any ordinary exposure until it is weaned, perhaps a little longer. When a pig has reached fifty pounds in weight he can be immunized for a period of six to twelve months at a cost of 71c by the use of anti-hog-cholera serum and virus. This period of immunity from cholera, which in most cases lasts until the animal is a year old, should give a farmer time to market his hogs. Precisely this method of immunization is being practiced by some hog owners in this State with good results.

Another larger group of men are immunizing their hogs with anti-hog-cholera serum and virus at the age of five to six weeks. This plan reduces the cost to half that of the first method. These men are also having good results.

There is still a third class of men whose pens are saturated with cholera, whose breeding stock are highly immune to this disease, who immunize their pigs, using one-half the regular dosage of serum and four times the dose of virus and obtain the very best results. Most of these men feed uncooked garbage. Garbage will cause hog cholera when it contains trimming from fresh uncooked pork that had a touch of cholera before being killed.

When healthy herds, absolutely free from cholera, are vaccinated with serum alone, there should be no loss whatever; when the serum and virus method is used there may be a loss of from one-half to one and one-half per cent of the hogs. This loss can be almost entirely prevented by first giving the serum and following it in ten days to two weeks with serum and virus.

The loss is probably due to one of the following causes: Either part of the large dose of serum is squeezed out from the needle hole, the virus remaining, or the animal is especially susceptible to the disease. On account of this possible loss from cholera and the possibility of the disease spreading to his neighbors' herds, no farmer is justified in using this method of immunization unless his pens are already infected, or he is in actual danger of infection. When the pens are already infected, the serum and virus method of immunization seems at the present time the best to follow.

Some men have gone into the hog-raising business with the expectation of vaccinating their breeding stock and the little pigs as fast as they are weaned. This is the wrong attitude to follow, unless a farmer's pens are infected with hog cholera or he is constantly bringing the disease onto his place by garbage or the introduction of hogs.

The hog raiser should depend very largely on sanitation and cleanliness to protect him from this disease. If all the farmers in the State would follow the measures advised by Dr. Keane in an article which appeared in a recent issue of this paper, there would be less hog cholera and less call for anti-hog-cholera serum and virus. None of our domestic animals respond better to clean water, good feed and sanitary housing than does the hog. If to this is added a frequent dipping in a good sheep dip, the locating of hog pens away from public roads and the absolute refusal to permit visitors to the hog pens, much cholera would be prevented.

When cholera does break out among a herd of hogs, or the herd is in immediate danger of contracting the disease, anti-hog-cholera serum and virus should be used. The healthy animals should be treated, the dead ones burned, the entire place cleaned and disinfected, buildings and fences whitewashed with government carbolic acid wash, and the lots plowed and sewed to grain. The first few litters following the outbreak should be given anti-hog-cholera serum alone. Then serum should be discontinued for several weeks and if no more little pigs contract the disease, the place may be considered free from cholera and the serum permanently discontinued.

The United States Department of Agriculture has issued a warning to alfalfa growers against the planting of Turkestan alfalfa. This is stated to be an inferior variety. It also carries some weed seeds not found in other kinds of alfalfa, a fact that assists in its identification.

DUNHAM-McLAUGHLIN COMPANY
OAKLAND, CAL. WAYNE, ILL.

PERCHERONS

At the **GREAT CALIFORNIA STATE FAIR** last month we **WON** every **FIRST PRIZE** competed for; also won **CHAMPIONSHIP FOR BEST STALLION** any age; also **Premier Honors** for the best group of five stallions any age.

The unprecedented success of our business is due to the extraordinary quality of our stock; careful, conservative management and perfect fulfillment of our obligations.

STABLES: EMERYVILLE RACE TRACK
OAKLAND, CAL.

DUNHAM-McLAUGHLIN CO.

THE LAND OF PEACE, PLENTY AND PLEASURE

ARE YOU intimately acquainted with all the alluring advantages of the "Land of Plenty" —Southern California? Here nature is found in all her rapturous beauty and glory; here fragrant flowers, golden fruit and perpetual sunshine bring peace and happiness to the mind; here cold, snowy winters and sweltering summers are unknown; here people live in the great outdoors, enjoy long life and grow sturdy.

Surely everyone must be interested in inside facts about such an ideal region, especially those who expect to visit SOUTHERN CALIFORNIA next year during the Panama Expositions or at any other time.

Interesting facts completely and exhaustively compiled covering the vast natural resources, prosperity and beauty of wonderful SOUTHERN CALIFORNIA will be given in the magnificent Anniversary Number of the Los Angeles Examiner, which will be published December 22, 1914.

This Anniversary number will be mailed anywhere in the United States or Mexico for 15 cents a copy—20 cents to Canada —25 cents to foreign countries. To make absolutely sure of getting a copy or copies fill out the blank herewith NOW. Also have a copy sent to some of your friends.

LOS ANGELES EXAMINER,
Los Angeles, California.

Enclosed please find _____ cents. Send the Twelfth Anniversary Number to the following names:

Name_____ Street_____
City_____ State_____
Name_____ Street_____
City_____ State_____
Name_____ Street_____
City_____ State_____

Poultry and Other Problems

Poultry Problems Answered by Prof J. E. Dougherty.

POULTRY FEEDS—Please give the food value of raisins as a poultry feed in your next issue of Orchard and Farm. Also, what is a good feed for fattening cockerels?—T. B., Fresno, Cal.

We have never had any experience in feeding raisins to fowls and have never heard of them being fed by others. Perhaps some of our readers have fed raisins and will give us their experience. Birds eat and relish all kinds of fruit, and as far as we know, cull raisins fed in limited quantity in connection with the regular ration ought to prove both palatable and beneficial to poultry. We would advice trying a few at first.

A good crate fattening ration for the production of milk fed carcasses is as follows: 2 lb. barleymeal, 1 lb. cornmeal, 1 lb. shorts, 8 lbs. buttermilk or skimmilk. Put birds in fattening crates, starve 24 hours, then feed the above ration 3 times per day for 10 to 14 days before killing. Give grit and charcoal between meals, but no water to drink. Bureau of Animal Industry bulletin 140, U. S. Department of Agriculture describes crate fattening in great detail. It can be secured on request.

COST OF BREEDING STOCK—Can you tell me the price of good Leghorn and Andalusian roosters and hens to be used for breeding purposes, also where they can be obtained?—H. K., Honolulu, Hawaii.

Breeding stock can be obtained at all prices from about $1.50 each up, depending upon the quality of the birds. The advertisements of reliable breeders can be found in any of the leading magazines.

CROOKED TAIL—I have a fine young cockerel which showed a lot of fine points, and I was thinking of putting him in at the poultry show. However, he has lately developed the much-dreaded wry tail. I pulled out all the long feathers to see if it would help, but it still seems to hang a little to one side. Is there anything that can be done to get it back to its natural position?—J. E. S., Oakland.

There is nothing, so far as we know, that will correct the defect you name. The tail may straighten up of itself in time. The roosts should be far apart and away from the wall.

POISONED TURKEYS—Please tell me what is the matter with my turkeys. When first affected, they begin to stagger and their heads will hang down as if their muscles were paralized and finally they cannot walk. We live by the side of a canal and the turkeys wade in it nearly all the time, picking out green roots and grass that float down. The water is very muddy, being Colorado river water. Is it from wading in the water too much or have they eaten something that poisoned them? Is there a remedy? I lost ten in one day. Some lived an hour or two and others a little longer.—Mrs. G. D. S., Imperial, Cal.

The limberneck and the sudden loss of so many would indicate poisoning. The turkeys have evidently picked up some putrid animal matter or other poisonous material. A severe case of colic might also cause the trouble. If the canal water has a steady flow, it would not hurt the birds except by carrying to them harmful materials. Give all the flock a dose of epsom salts at the rate of a small teaspoonful per bird, dissolved in the water used to mix a wet mash—give only just what they will clean up. Remove the cause as far as possible to prevent further trouble.

LICE—Kindly tell me what to do and how to get insect powder well distributed among the fowls' feathers, because my hens seem to be bothered with lice. I paint the roosts with crude carbolic acid and there don't seem to be any lice on them, but I can't keep the lice from the feathers. SUBSCRIBER, Oakland.

An excellent treatment for body lice is blue ointment. Secure 25 cents' worth of the ointment reduced to 25 per cent mercury at the drug store and apply a small portion (about the size of a green pea) on the end of the finger directly to the skin below the vent of each fowl, rubbing in well. Do not smear the ointment over the feathers. Put it on the skin. Three or four applications a year are sufficient to control this parasite.

OLIVE POSSIBILITIES—Can you give me any information regarding the possibilities of returns from an investment in olive land to be planted to olives in the section four or five miles east of a line between Honcut and Palermo in Butte county?—M. A. S., San Rafael, Cal.

As far as any particular piece of land is concerned, we would be unable to give advice by mail, because in every part of California you will find poor land as well as good land. By examining the soil for depth and quality, investigating the way that similar soil produces olives or whatever crop you expect to raise, noticing character of native vegetation and finding what moisture conditions will be, you can determine fitness of the particular piece of land. Regarding the location in general, as we are familiar with that country, it can be highly commended as an olive producing section. It is well to have a location fairly free from heavy frosts and yet with a high summer heat, and Butte county, where the valley begins to give way to foothills, and where citrus trees are grown commercially, offers just what is needed for olives. As said above, for the piece of land in question, you will have to determine its value by quality and nature of soil, also location as relating to frosts and heavy winds, etc. We consider the olive an excellent proposition. Prices seem bound to rule high for many years to come, and while there is always a possibility that too much of any fruit may be produced for the market to take at high prices, the possibilities of an overproduction of pickling olives seem very remote. It would, however, be out of the question to tell any prospective grower what to expect in the way of returns. There is too much variation between what two pieces of land will produce, between the results that two different men will secure under equal advantages and between what the market will be and what we might guess it would be, but if the land looks good and you can attend to the orchard properly, we would certainly say to go ahead.

SALTING DOWN VEAL.

R. S. K., Santa Rosa, makes the following request:

Will any subscriber or reader of Orchard and Farm kindly tell me if I can salt down a six months old veal calf as you can beef? I am going to kill it this November and would be very glad if some one who has had experience with meat would let me know how to fix the meat.

Who will reply? We will publish the reply that we feel would be most valuable to readers, sending some reward for same, as in our Household Exchange.—Editor.

The war is reported to be cutting off supplies of vetch seed and raising the prices of same. The U. S. Department of Agriculture therefore is advising, where this seed cannot be obtained, to use a rye cover crop and add some nitrate of soda in the spring. This advice applies more to the east than the west and where vetch seed cannot be easily obtained in California other leguminous cover crops can well be used. Much vetch seed is produced in Oregon, and there is no particular shortage on the Pacific Coast.

Some do lots of work without planning; some do lots of planning and no work. A combination of plan and work gives best results.

How To Save Money on Tires

Firestone Tire & Rubber Co., Akron, O.
Without obligation on my part please send me free a Firestone Inner Tube Bag and your book, "The Care of Tires." I want Book No. 37. Below I give name of tire I use and dealer I buy from.
I use the following make of tire.....
Dealer's name.....
Dealer's address.....
My name.....
Address.....

THE Firestone experts have answered that question once and for all for every car owner. They have answered it first by building the kind of tires that save most money. And they have answered it also with a valuable book that shows how to save some money, no matter what tires you use.

If you own a car, send the coupon above or write us for this book. If you give us the name and address of your dealer and mention what tires you use, we will also send you Free a Firestone Tube Bag See below.

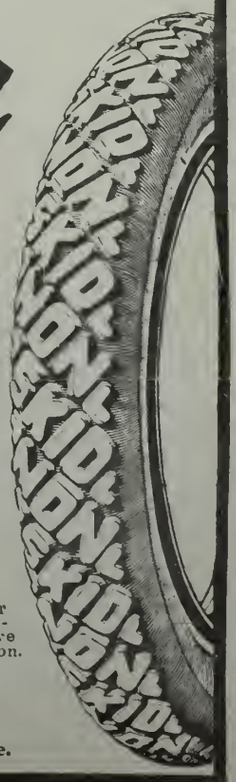
Firestone
Tires and Tubes
Defeat Them All in Service—Meet the Ordinary in Price

For 15 years—as you may know—Firestone quality has led the world. There has been no break in the matchless record of Firestone Tires in daily service, on all roads, on all kinds of cars. Yet they cost you no more than the average Firestone builders are tire specialists, with the largest exclusive tire factory in America. You get the benefit of this specialized production and enormous output. Only average price for the tire of extraordinary service. Most Miles per Dollar.

FREE to Car Owners
Tell us the name and address of your dealer and the tires you now use, and we will send you FREE with our book this popular Firestone Waterproof Tube Bag. Will keep your extra inner tubes fresh, dry and clean, and protect them from injury.

If You Can't Get Firestones Easily We Will Have Them Sent to You
Nearly every dealer sells Firestone Tires, but if your dealer has none, he will get them promptly if you insist. If you are not near a dealer, write us, and we will see that you are supplied from a nearby station.

Mail Coupon or Card for Free Book Now—Ask for Book No. 37.
FIRESTONE TIRE AND RUBBER COMPANY
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio—Branches and Dealers Everywhere.



Alkaline Water and Irrigation

It is water that makes the desert spring into life and it is in the desert also that water frequently is found too alkaline for successful use, or of use only in special cases or by special methods. Frequently water can be used that appears too bad for use; frequently the fact that it is too bad to use is discovered too late. The subject is discussed in an account issued by the Arizona Experiment Station, which will be good for persons relying on irrigating water carrying more than normal amounts of various mineral substances.

Too often (it is said) the prospective settler or homesteader considers only the depth to water and the available supply when found. Modern pumping machinery has increased greatly the depth from which water may be lifted and better cultural methods have increased the duty of the water so that now a farmer can be successful under conditions that a few years ago were impossible. However, the effect of bad water is not so easily, and in fact rarely, to be overcome.

It happens occasionally that two waters occur close enough together so that, although either alone is unfit for irrigation, yet when combined in proper proportion they give a water of usable quality. Such is the case where a very pure, but prohibitively black alkaline, water occurs near a strongly saline but hard water; sometimes the two may be blended to give neutral water of moderate salt content that will answer well for irrigating.

Again an abundance of pure, sweet flood water may be available from time to time, which can be applied to work out and carry away the alkali accumulated from the application of alkaline pumped water between the flood periods.

But these conditions are not general and usually the farmer will find it well to consider the quality of his water supply before going to the expense of testing out the yield. All waters that have a strong saline taste are too salty for use excepting under special conditions. On light soils, well drained, and with an abundance of cheap water so that the salts can be kept leached out of the upper three or four feet of soil, excellent results may be had indefintely. In proportion to the lack of these conditions, sooner or later the detrimental effects of the alkaline water will become manifest. In some cases it may be only a few years; in others a generation.

In Arizona the quality of ground water is apt to be a local condition, sometimes confined to a very small area. There are in general regions of saline waters, of black alkaline waters, and of pure waters, within which most of the waters are of the same general character. But occasionally a good water is found in a district where bad waters abound and the reverse is not unknown. Attempts have been made to improve the quality of water by prolonged pumping, but usually without success. One well, however, with very salty water occurred in the Rillito valley near Tucson in a district of generally good waters. Recently this well has been pumped freely and is now quite as good as other waters in the neighborhood.

Water for irrigating cannot be judged solely by the taste, since an injurious amount of black alkali does not reveal itself this way. Black alkali waters usually make very satisfactory domestic waters, since they are soft and work well with soap. They are not more harmful to the health than other waters with a little pinch of baking soda added; in fact, in some cases they may be decidedly beneficial.

The importance of the quality of irrigating water should be emphasized. Some farmers have been led to make heavy investments because they have found an abundance of water near the surface, never stopping to consider the quality until they saw the injurious effects of its application. Others have been saved time and money by consulting authorities before going ahead.

The U. S. Department of Agriculture has issued a bulletin showing the cost of running a New York apple orchard. The cost for a 15 acre orchard in full bearing was $1,217.92 the first year and $2,125.69 the second year. The first year 937 barrels of marketable apples were produced and 2,104 barrels the second year. The barrel cost the first year was $1.30 and the second year $1.01. Western apple growers can compare these costs with those needed for apples here, save that the comparison will be by boxes instead of barrels.

Life would be dull indeed without its lights and shadows.

The Use Of Hercules Dynamite On Farm, Orchard and Ranch

MANY people who are unfamiliar with dynamite have the idea that it is both difficult and dangerous to use.

Relatively speaking, this is not at all the case. Of necessity anything which has great inherent power is dangerous under certain circumstances. The fire in your kitchen stove, the gasoline in your car, the electricity or gas that lights your home—all are in a sense dangerous. You have to be careful with them.

You have to be careful with dynamite too. But this necessary care is a very small price to pay for the almost unlimited benefits derived from it when put to agricultural uses.

It will give you better, stronger trees, finer fruit, bigger crops. It will run ditches, fell trees, lift stumps and rocks, excavate cisterns, cellars, wells, etc. more quickly, more efficiently, and at less expense than the same work can be done by any other means. Yes, that care it requires, is care well invested.

We have published an interesting and instructive book, "Progressive Cultivation." It tells all about dynamite—how to handle it, how to store it, how to use it. You will find it both interesting and instructive reading. Write for a copy. No expense involved.

HERCULES POWDER CO
Chronicle Bldg., San Francisco, Cal.

Please send me a free copy of your book, "Progressive Cultivation." I am interested in Dynamite for

_____

_____

_____

How to Prime a Dynamite Cartridge

"Priming" is the inserting of the detonator, whether blasting cap or electric fuse, into the cartridge. When cap and fuse are used, it is first necessary to attach the cap to the fuse.

The fuse should be cut into lengths long enough to reach from the charge when loaded in the hole to at least three or four inches above the surface. One cap is then taken from the cap box by covering all of them, except one, with the box lid or with the hand and allowing the loose one to slip gently into the free hand. Do not try to pick caps out of the box with tweezers, nails, or any hard substances as they are likely to be accidentally exploded. Slip the cap carefully over the end of the fuse, taking care not to push the fuse very hard against the explosive charge loaded in the bottom of the cap and do not twist the cap on the fuse. When the fuse is pushed to the bottom of the cap, make a crimp not more than ¼ inch from the open end of the cap by using a Hercules cap crimper. A glance at the illustration shows you how this is done.

There are two accepted methods of priming dynamite—placing the detonator in the end or in the side of the cartridge. The former is the better way.

When priming in the end, the paper is folded back at one end of the cartridge and a hole made with a wooden punch about the size of a lead pencil or with the straight handle of the crimper into the exposed dynamite. The cap with fuse attached is inserted into this hole and the paper drawn together and tied tightly. The cartridge is then ready for use.

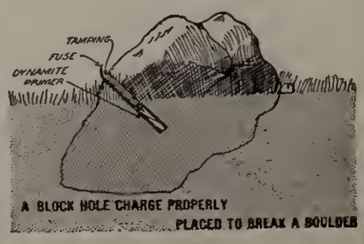
Dynamite Removes Rocks Cheaply and Quickly.

There is but one best way to do anything. The best way to remove rocks or boulders from a field that is to be cultivated is by the use of of Hercules Dynamite. As a matter of fact it is, in many instances, the only way.

There are three accepted methods for rock blasting. It may be done by means of a block hole, a snake hole, or by mud-capping. The first is illustrated here. It is a slower method than either of the other two and is only necessary in cases of very large rocks or boulders.

When it is used, the charge is exploded near the center of the rock, as the illustration shows. When Hercules Dynamite is properly used the rock always goes, no matter what its size.

The other two methods of rock blasting are described in "Progressive Cultivation." Write for your copy.



A BLOCK HOLE CHARGE PROPERLY PLACED TO BREAK A BOULDER

Potato Pests and Their Control

By State Commissioner of Horticulture A. J. Cook

It is not necessary here to praise the potato as an article of food. We must have the carbohydrates—sugar and starch—in our food. Milk, nature's typical food, is generously supplied with sugar. Almost all our most prized grains, fruits and vegetables abound either in sugar or starch, it matters little which, as starch in the digestive cavity is quickly changed into sugar. Not only are the carbohydrates real essentials in food, but they serve also to economize the proteins, like cheese, muscle, legumine and gluten. This counts well for the carbohydrates, as protein is the most costly element in food. We are all aware from dear experience that the "high cost of living" has a balance sheet against meats in our dietary.

The potato is one of the chiefs in this carbohydrate group. Nearly 20 per cent of these tubers is starch. As food, then, the potato takes high rank.

The potatoes of the "delta region" in this and contiguous counties bordering on the San Joaquin and Sacramento rivers, as most of you know from a personal test, are of highest excellence. We also know that these islands are naturally adapted to the growth and development of this vegetable. Other portions of our State are also admirably fitted by soil and climate to grow this succulent food product. Anything, then, that strikes at the prosperity of the potato interests of California is a sore menace to the business of the State.

May I venture to call attention to four evils that to-day frown upon this industry in portions of our State, each of which may well receive attention at this convention.

Seed.

The importance of good seed can hardly be too much emphasized. In case of potatoes, as with all vegetables, grains and fruits, the seed should be carefully selected. It should be from hills which produced numerous tubers of desirable size. These, of course, may be cut, and will be if large. Only perfect, smooth, sound potatoes are fit for seed. The observance of this suggestion will aid greatly to eliminate scab and other fungous troubles, as also eel worm and tuber moth. The matter of hill selection has been sadly neglected in the past, I think, in most localities. Caution in this respect has been known to advance the yield more than 30 per cent. It is a prevalent belief that a frequent change of seed, procuring it from other localities, is desirable with potatoes as with most agricultural products. This may be due in part to the likelihood that continuous use of a strain tends to breed pests, especially the obscure forms, like eel worm and many fungi. How often Corticum vagum (rhizoctonia) would be mistaken for scab or go utterly unnoticed! It will always pay well to reject all imperfect seed and then to treat the seed with a fungicide as a further precautionary measure.

Rotation of Crops.

This, like seed selection, is exceedingly important. It tends to eliminate rather than foster disease and pests. Each grower should study to know what crops are adapted to his soil and conditions. He should then select from these crops that will pay, and also those that will tend to free his soil from fungoid, insect and weed pests that may have pre-empted his land. Without question this subject is one of paramount importance and worthy of prompt attention by all growers.

Fungi.

Fungous troubles have laid a heavy hand on the potato industry. The ugly imprint of scab, the too common "little potato" or rhizoctonia and dry rot fungus have depleted the pocket books of most of our growers. Of course, clean and treated seed has special significance in relation to fungi. If the soil is clean and we only use clean seed, then both soil and seed will always be clean and the growers' pocket books will be flushed. These maladies for the most part require naught but knowledge and caution to hold them at bay, as ugliness, deformity or blight always tell of their presence.

The Tuber Moth.

Fourth and last, we are confronted with the tuber moth problem. We owe this convention to the presence of this insect in our potato fields and in our storerooms. Potatoes harboring this moth and shipped to other States have resulted in a quarantine in three or four sections or States and have led to the destruction of whole carloads of California potatoes in other States, with much loss to shippers. There are two horns to this dilemma—either we must ship only clean potatoes or else we must expect these quarantines and this destruction to be continued and even increased. It is to be hoped that we can institute measures at this time that will utterly prevent the shipping of affected tubers from this to other States or countries.

The life history of the tuber moth is simple. The small gray moth lays its eggs in early and again in late summer on potato foliage or stems or on the stems of other plants, mostly of the potato family, or on exposed tubers in the field or in the storeroom or pit. As the eggs hatch, the caterpillars either mine the stems and leaves, rarely pushing down in case of loose soil several inches and may enter potatoes which are not exposed. Their burrows in the tubers ruin them and permit of further destruction in field or cellar, as more moths are bred to lay more eggs. We see that there may be three, possibly four, broods in a season.

A Timely Suggestion.

In many of our foothill valleys, as also on the plains lower down, we have soil, sunshine and water, which insure large crops of ideal potatoes. In many of these sections there are no insects or fungoid pests. Have we not then in these favored valleys ideal conditions to produce seed which will meet every requisite of the most painstaking grower? I believe here is an opportunity for any alert, cautious, up-to-date rancher not only to feather his own nest, but to add to the resources of our State and provide the potato growers a very sine qua non to successful potato production.

(The above is the opening address by Dr. Cook for the convention held in Stockton late in September to discuss means of preventing serious difficulties likely to arise from the potato tuber moth and in other ways overcoming potato pests and diseases and putting potato production on a finer position in California than it is to-day.—Editor.)

BARLEY AT UNIVERSITY.

The University of California this year secured under practical commercial conditions a yield of 82½ bushels of barley to the acre at the University Farm at Davis, and 76 1-8 bushels per acre in 1913. In the fall of 1911 the west half of the piece was manured lightly with barnyard manure, then plowed and summer fallowed in 1912. It was sown in December, and in 1913 produced 76 1-8 bushels per acre. In November, 1913, the land was plowed nine inches deep and harrowed both ways. It was sown on December 5 to Beldi barley, 90 pounds to the acre. The barley was harrowed March 6 to break a crust caused by rain. The grain was harvested June 1. Part of this was cut for hay, yielding three tons per acre. The part cut for barley yielded 82.5 bushels per acre.

The key to success is of little value unless you use it.

Fair Play in Telephone Rates

IT is human nature to resent paying more than any one else and to demand cheap telephone service regardless of the cost of providing it.

But service at a uniform rate wouldn't be cheap.

It would simply mean that those making a few calls a day were paying for the service of the merchant or corporation handling hundreds of calls.

That wouldn't be fair, would it? No more so than that you should pay the same charge for a quart of milk as another pays for a gallon.

To be of the greatest usefulness, the telephone should reach every home, office and business place. To put it there, rates must be so graded that every person may have the kind of service he requires, at a rate he can easily afford.

Abroad, uniform rates have been tried by the government-owned systems and have so restricted the use of the telephone that it is of small value.

The great majority of Bell subscribers actually pay less than the average rate. There are a few who use the telephone in their business for their profit who pay according to their use, establishing an average rate higher than that paid by the majority of the subscribers.

To make a uniform rate would be increasing the price to the many for the benefit of the few.

All may have the service they require, at a price which is fair and reasonable for the use each makes of the telephone.

These are reasons why the United States has the cheapest and most efficient service and the largest number of telephones in the world.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

PUMPING PLANTS

CENTRIFUGAL PUMPS, HORIZONTAL AND VERTICAL GAS AND OIL ENGINES.

We have over 6,000 SATISFIED CUSTOMERS.
We have manufactured IRRIGATING PLANTS for 18 years.
Our Experience in This Line of Work Enables Us to Positively Guarantee

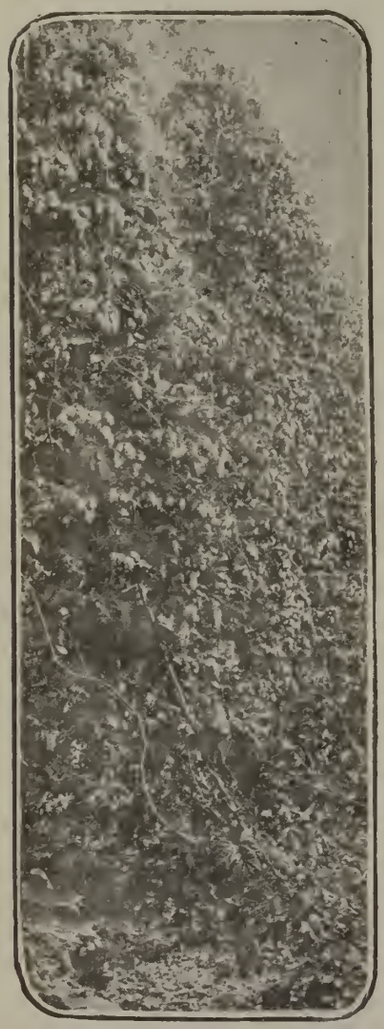
FIRST-CLASS IRRIGATING PLANTS

WRITE FOR OUR CATALOGUE O. B.

SAMSON IRON WORKS, Stockton, Calif.

The Best Results in Hop Growing

As is the case with many other crops, when California finds it profitable to grow hops, she finds it very profitable to do so and makes an almost unequaled success of the business. That far more are not grown is due to the fact that only the finest kind of soil is generally satisfactory for them, usually a rich loam lying



Hops on the McCutchan Ranch.

alongside of some stream bed. Much of the rest of the land naturally suitable for hops is taken up by fruit trees or other permanent planting, so the acreage is much less than present profits would seem to justify.

The fact that only the best of soil is ordinarily used for hops does not mean that the best methods are always used, or best results secured, for there is, as with everything else, a wide difference between what is done and what might be done on the average place.

Most California hops are grown in two main districts—along certain river bottoms in the Sacramento valley and along the Russian River valley in Sonoma and Mendocino counties. In the Sacramento valley the tendency is toward large holdings. In the Russian River valley the hops are much more likely to be grown by the farmer with a moderate holding. In the one section there are a few large growers (and some small ones), in the other many small acreages.

North, toward Ukiah in the Russian River valley, the common practice is to grow hops low, or on strings tied to poles seven feet high or thereabouts. South, towards Healdsburg and Santa Rosa, it is more common to have the hops trained 20 feet high. Naturally, the more vine, the more bearing surface and the larger the crop, provided the soil is strong enough to make a good, healthy growth of vine, and hops on high poles on rich land and having been given good care are quite sure to give much better yields than would be secured from low poles. This advantage is more than enough to offset the greater acre cost of high poles.

While many people believe it more profitable under their conditions to use low poles, there is no doubt but what the finest results in every way are secured with the higher growing vines and there is little doubt but what it would pay to fertilize more and give the ground better care and train the vines high on much land where low pole methods are followed now.

Just about the finest results in hop growing in appearance and results in the whole Russian River valley are secured by W. H. McCutchan of Alexander valley, near Healdsburg. There are a few hop fields in Sonoma county that can go in the same class with it, but only a few. A description of this will show the natural requirements for the finest hops and the care that brings the profits.

There are twenty-eight acres in this planting, close to the Russian river, which normally overflows in winter and covers the land a couple of feet deep for a day or so at a time. Under these conditions the soil is rich and fertile and makes the best results possible, though other fields under as good natural conditions do not come near this in yield or appearance.

The vines are trained from poles 20 feet high. In one section of the field, where there is a small depression, the poles are 24 feet high and the vines are growing better than ever, an indication of the extreme possibilities of hop growing, though no record of yield has been taken for such spots.

Two vines are left per hill and the typical vine is loaded down to a point of division of the vines, about three feet from the ground. The hops themselves are full and heavy in proportion to the vigor of the vines.

In 1900 these vines were a year old and in full bearing, for hops bear well as soon as they are well established. From 1900 to 1905 the yield averaged 8 36-100 bales per acre, a bale weighing 185 pounds net. During this time the field was given the barnyard manure from the whole ranch and received the finest kind of care otherwise.

If hop prices are good, it pays to do everything possible to increase the yield, and in the fall of 1905 Mr. McCutchan applied 500 pounds of complete fertilizer, in order to help the crop of 1906 and to strengthen the soil for later years as well. A similar application of fertilizer was given each year following until 1911, when a still heavier application was made to see if still better yields would follow still better treatment. That fall 800 pounds of complete fertilizer was used, being followed in the spring by 250 pounds of nitrate of soda.

The yield increased following 1905, making allowance for differences in the seasons, so that the average crop to and including 1911 was 10 89-100 bales per acre. After the heavier application of fertilizer just spoken of a still better yield was secured, the production of 1912 being 12 96-100 bales to the acre. That fall, in preparation for the 1913 crop, 1,000 pounds of complete fertilizer was applied and in 1913 the yield for the 28 acres averaged 13 14-100 bales per acre.

Leaving out of consideration the value of the land, it cost Mr. McCutchan approximately 8 cents a

No Other Like It In the World!

If you alight from the train at Durham, N C., the first thing you note is the delightful aroma and sweet fragrance which hangs over the whole town. This proceeds from the "Bull" Durham factory. Never was there so distinctive and lingering a flavor as that of "Bull" Durham; there is no other like it in the world.

"Bull" Durham smokers notice this, the moment they roll a cigarette and light it. The smoke has a delicious, relishable aroma that is wholly unique and individual. You get it in no other tobacco. It is produced by a generations-old process known only to the makers of "Bull" Durham.

GENUINE
"BULL" DURHAM
SMOKING TOBACCO
(Enough for forty hand-made cigarettes in each 5c sack)

"Bull" Durham has been the standard smoking tobacco of the world for three generations. "Bull" Durham hand-made cigarettes are a *distinctive* form of tobacco enjoyment. Their *flavor* and *freshness* are delightful. Get "the Makings" today and "roll your own."

Ask for FREE book of "papers" with each 5c sack

An illustrated booklet, showing how to "Roll Your Own," and a book of cigarette papers, will both be mailed free, to any address in U. S., on postal request. Address "Bull" Durham, Durham, N. C., Room 1100. **FREE**

THE AMERICAN TOBACCO COMPANY

Fine Stock at International

I am now planning a trip to the **International Livestock Show** in Chicago for the first week in December and will purchase registered livestock for some of our best California breeders. Anyone in need of such stock should write, or come and see me at address given below. I can get you just the stock that you need at the best prices and will save you money both in buying and freight.

W. M. Carruthers - **721 Hearst Building, San Francisco**

pound to raise hops. Counting in land values, taxes, etc., the cost would be a few cents more, so profits usually are immense, depending on prices.

Hops vary immensely in price from year to year, depending on market conditions, which is one reason more are not grown. This year, at the beginning of the picking season in the Russian River valley, they were about 22 cents a pound. Last year they were sold from this ranch at 26¼ cents a pound. As the average yield was 2,420 pounds per acre, the acre income was $635. Such yields and prices are both extremely high, and although the grower can regulate production to a certain extent by the way he treats his soil and vines, seasons permitting, he cannot figure on prices like those of 1913.

The matter of fertilization of hops is interesting in several ways. In theory it is possible, by the application of too much nitrogen, to stimulate the growth of the plant so that it will go more to growth than to hops themselves. It is doubtful if such fertilization is ever done, though vigorous growth and poor yields occasionally occur on land too well supplied with moisture and decaying vegetation for the amount of potash and phosphoric acid available. A sufficient supply of the two last-named plant foods is required for the fruiting of almost any plant and when everything favors the vigorous growth of the plant itself, the fruit production will in most cases be proportionate to growth if potash and phosphoric acid are abundant also. For this reason it is very desirable to have a good deal of potash and phosphoric acid for hops.

At the same time it is impossible to get heavy yields unless there is nitrogen enough to make the plants grow well and healthfully, so some nitrogen is good in a hop fertilizer and humus in the soil as well.

The fertilizer used in the fields told of is the Gaviota brand, containing 2½ per cent nitrogen, derived from several sources, so that it will become available to plants gradually and thus make for continual growth; 11 per cent phosphoric acid, derived from bone and superphosphate, 8 per cent being available, and 9 per cent potash from the sulphate.

A superstition regarding fertilization is that it is best done in the spring, just before the growth starts, which may be true in special cases, but not ordinarily true for crops with permanent root systems, like hops or fruit trees. Hop growers in the Russian River districts are using many carloads of fertilizer the last few years and, with very few exceptions, they are applying it in the fall.

If the soil itself is in danger of washing away, the fertilizer will be lost with the soil, but potash, phosphoric acid and organic nitrogen stays with the soil, no matter how much water comes upon it. In the McCutchan hop fields, that are flooded every winter for short intervals, the fertilizer is applied in the fall and evidently sticks, or it would not give the results indicated.

Hops grown under the best conditions are also superior in quality to those that bear under protest, if the expression is permissible. A sickly or rather weak growing hop vine naturally cannot make as full a crop as one with everything going to its satisfaction, as can be seen by examining two hop fields, one in poor condition and the other in excellent shape, though the probability is that the weak vine will set as many hops as it has strength to mature, though these hops may not be as large, full and heavy as they should be. Overgrowing vines, too vigorous for full fruiting, are also likely to have light hops also, but a hop produced under good conditions will be both large and heavy, losing less in drying than light hops.

Mr. McCutchan's hops dry about 3¼ to 1, according to his statements, which seems about right from their appearance on the vines. As an average for the whole district, perhaps 3½ to 1, or more than that, would be about the right figure. Heavy hops, however, are not primarily a matter of fertilization, but of good, healthy growth, however that growth is secured, and there are lots of fine hops grown in California.

Hop methods do not all come up to the standard of hop soil, which is the best there is, but even at that, hops form one of the best of California crops.

COMMERCIAL ASPECTS OF ALMOND PRODUCTION

(Continued from Page Four.)

ing and irrigation are being used successfully, as is suggested.

As yet the almond centers mainly around the Sacramento valley. To the mind of the writer the most wonderful opportunity for the almond today, and one that seems to have been ignored utterly, is at the edges of the San Joaquin valley, particularly where the heaviest citrus plantings have been made. Frosts are the main discouragers of almond production, and these places have been planted to oranges, particularly on account of freedom from serious frosts. Likewise melons and other early crops are often grown there simply for the mild spring temperatures. Theoretically they are ideal for almond growing.

About the largest planting in the great Tulare citrus district is of five acres on the Merriman place, near Exeter. There are also here and there door yard trees that have been producing heavily and uniformly, and enough has been done to indicate that the almond in these places has everything in its favor and is one of the most promising trees to plant that there is.

As the rainfall decreases greatly from Stockton to Bakersfield, in the thermal belt of the San Joaquin valley, irrigation will have to be practiced, as it is for all crops, but irrigation will pay with a yield of half a ton of almonds or better per acre, and in time doubtless the San Joaquin will be at the side of the Sacramento as an almond district. In fact, the decreased rainfall, by making better weather at the time of pollination may increase the probability of good yields and there is an indication that this actually proves to be the case.

The subject could be talked of for hours, but as a commercial proposition it simmers down to this: The markets, present and future, are ideal. The almond is considered a fine crop now, and selection of varieties for pollination, selection of right conditions for frost, pest control, increasing tree vigor by better pruning, cultivation and irrigation can greatly increase the uniformity and amount of yield, and if the almond pays now, it should pay much better later. With all certainty anyone who has the opportunity to develop a good almond acreage can well look thoroughly into the matter of going into the almond business.

The crop reports of the United States Department of Agriculture indicate that there has been a slight falling off in prospects of yield of most crops during August, as compared with July. As a general thing, crops are good. The condition of several crops on September 1, as compared with average, were: Peaches, 116 per cent; apples, 115 per cent; grapes, 107.8 per cent; hay, 106 per cent; lemons, 105.6 per cent; alfalfa, 105.2 per cent; pears, 105 per cent; barley, 102.7 per cent; oranges, 101.5 per cent; potatoes, 97.2 per cent; onions, 97 per cent; lima beans, 96 per cent; hops, 88.5 per cent. California crops are said to be 108.5 per cent of normal.

Never let the machinery cry for oil, for oil is the cheapest aid to the saving of machinery that we have.

A free book for the man who wants to know how to raise large crops

Here is a book which will tell you a great deal about soil—will tell you something about soil which will raise large crops and tell you the reason why poor soil produces small crops.

You should have this book and study it. You can't just read it and get the facts because the information it contains is too valuable for a casual reading.

Send for it to-day. It is free for the asking. You will be surprised at the wealth of information it contains for you.

Pacific Guano and Fertilizer Company
343 Sansome St.
San Francisco : : California

Here are a few items which this book tells about

It Tells--

- About the 14 elements necessary to sustain plant life.
- The 10 necessary food plant elements which must be in the soil.
- What lime is for.
- The effect of iron upon the color of the vegetation.
- How potash produces starch in plants.
- Why phosphorous is necessary for plant-life to live.
- Necessity of nitrogen in the soil.
- How plant-life cannot utilize the elements of the air if there are not sufficient mineral elements in the soil.
- How plants feed.
- What humus is.
- The theory of cultivation.
- Bacteria in the soil.
- What available soil fertility is.
- Maintaining and increasing fertility.
- And 100 other points not mentioned in this list.

THE PACIFIC GUANO & FERTILIZER CO. SAN FRANCISCO, CAL.

THERE ARE INNUMERABLE BARGAINS CONTAINED IN THE ADVERTISEMENTS ON THE FARMERS' MARKET PAGES. YOU SHOULD NOT FAIL TO LOOK FOR THEM.

Answers for Farm Problems

FOOTHILL CROPS—I have about 60 acres of rather flat foothill land on my 240-acre farm near Placerville and would like to know if alfalfa would grow without irrigation. We usually have rain here to July 1 and the land in question is quite moist to about the last of July. Is there any crop which would grow without irrigation except annuals? I have an orchard on quite a steep slope which I want to sow in some grass to prevent washing. What would be desirable? What legume would do well here (elevation 2,100 to 2,200 feet) to improve the condition of the soil? Soil is decomposed granite. Will feterita or Egyptian corn do better for cropping on summer fallow here? F. W. G., Placerville, Cal.

You can grow alfalfa without irrigation under the conditions you describe and it would also be an excellent thing to grow. Some of the common grasses found almost all over the State are perennials, but do not think that you can get anything better than alfalfa in that line for the conditions you describe. There is nothing better for an orchard apparently in Placerville conditions than a mixture of red clover and rye grass, which can be used in an orchard with irrigation only. Without irrigation clean cultivation has to be practiced. Possibly alfalfa in the orchard might be even better than red clover and rye grass, but the latter is the standard thus far at your elevation. Would advise this only for full bearing trees, not for young trees with root system not fully established. For young orchard would rather advise clean cultivation. To prevent soil washing and also to aid the soil by growing a legume, plant vetch as early in the fall as you can get it up. Vetch is apparently the best legume for your elevation for a cover crop and is most excellent for the soil. We would like to see both common vetch, bitter vetch and purple vetch tried out under your conditions, these being spoken of in article on cover crops in August issue. Feterita is still on trial in California, but from all we can see and hear it has good prospects as our best grain sorghum. In theory it should be better than Egyptian corn for you. As we met several farmers in El Dorado county who were trying it this year you should be able to get definite facts regarding it and we hope that results of trials will be reported to us. Simply as a forage we believe that Sudan grass, another grain sorghum, has excellent possibilities for you and would advise the trial of a sample next year. County Horticultural Commissioner J. E. Hassler, Postoffice Placerville, could perhaps visit your place and give definite advice if you would drop him a note.

ANGORA GOATS—We were much interested in your article in a late issue on Angora goats. I am anxious to find out and get into communication with the parties nearest us who have good animals for sale. Also I would like to ask how much milk one might reasonably expect from one of these goats at a milking.—Mrs. A. P., Auberry, Fresno county, Cal.

The Angora goat is certainly worthy to be put on any ranch that has rough, brushy land, and it is hoped that you decide to get a few animals. It is only a question of time until they are numerous in every part of California that is suited for them. We are mailing you the names of several persons from whom you can obtain a few. The fact should be emphasized, however, that the Angora goat is not a milch goat and gives no milk except what is used by the kids. The kind of life they live is not what would be best for milch goats, and there is as much difference in the anatomy of an Angora and a milch goat as there is between a typical Hereford steer and a Jersey cow. The Angora is a small animal, but of a square build; the milch goat is of a wedge shape like a fine milking cow. The one gives valuable fleece or mohair, the other milk. Do not expect any milk from the does, let them have it all for their kids. The mohair, mutton and brush eating is more than enough to recommend the Angora. When you want milk get a real milch goat, which produces no fleece at all.

CAROB—Can you identify the tree or shrub from which the inclosed twig was cut? It came up volunteer on an irrigating ditch bank. It is now about three feet high, and the trunk at the ground is about three-quarters of an inch in diameter. There are no trees nor shrubs growing here like them.—A. E. B., Delano, Cal.

Prof. H. M. Hall, economic botanist of the University of California, states that the twig is from a carob plant (ceratonia siliqua). This tree is extensively grown in the Mediterranean countries and produces large quantities of bean pods of high value for stock food, being "the husks that the swine did eat," spoken of in the Bible, and pretty good eating they were, fine for the stock and worth eating in small amount by humans. There has been some enthusiasm about carob growing in California, as the tree can produce well in poor locations and very limited rainfall. The one big trouble is winter frosts, the carob being a tree for the subtropics only, and although it will grow in places where an orange tree will prosper, it is very sensitive to frosts when it comes to fruiting, and except in very frostless locations, it is likely to lose its crops in ordinary winters. In very frostless locations the tree is very worthy of attention. It is not likely to be good as a forage producer in your situation. The carob is grown to a limited extent among the foothills of the Sierra Nevada and it is probable that the seed washed down in the irrigating water to your ranch.

TREE TROUBLES—My apricot tree is covered with gum balls. What can I do for it? I have two quince trees large enough to bear that never have bloomed. What can be done for them? What is the best material for spraying orange trees for scale?—J. K., Anaheim, Cal.

The gumming of your apricot tree may be due to sunburn, to sour sap from a cold spell in the spring after the sap had begun to flow freely, or to bad moisture or soil conditions of some kind. If the latter, remedy the same, whether it be too much water, too little water, alkali or what. For definite treatment, if you care to try it, cut out diseased bark and wood where gum exudes down to healthy tissue and paint with Bordeaux mixture or wax. We know of no way to make quince trees blossom that will not blossom. Sometimes young trees that are in fine growing condition grow so well that they forget to bear, and checking their growth by less moisture or fertilization or partial girdling may help. Perhaps they will steady down to blooming and bearing when a little older. If not, work them over to quince varieties you know to bear in your locality, or to pears, for pears on quince make excellent trees, small, but fine producers of fine quality fruit. We seldom advise spraying citrus trees for scale, as fumigation is the standard method of scale control and far superior to spraying in all but special cases. Communicate with your horticultural commissioner, Roy K. Bishop, Santa Ana, and he will arrange to have your trees fumigated at minimum cost and in the most effective way. Or, if you wish to have your trees sprayed anyway, you had better see him or get some other expert advice in order to determine what spray mixture is best to use, and how strong it should be, taking into consideration the condition of the trees, the variety of scale and the condition of the scale at time of spraying. The county horticultural commissioner is paid by the county to look after just such things, and you certainly should see him before beginning scale treatment. He can also advise you better than anyone could at a distance regarding quinces and apricots.

WINTER EMMER—Being interested, by a recent magazine article, in winter emmer, I would appreciate your advising me with what success this crop has been grown in California, where the seed can be obtained, and such other information as might be given.—E. S., Sonoma Valley, Cal.

We referred this question to C. C. Morse & Co., from whom you can obtain the seed, which probably is also carried by other seedsmen, who state: "Winter emmer has not been used to any great extent in California, but where it has been tried it has proved to be a very heavy yielder of hay. It must be threshed, however, at just the proper time, as it is apt to shell badly. It has been grown in Mendocino county with considerable success, also in the Lake Tahoe region. It seems to be suited to a large range of soil and climate, but we do not believe it will ever take the place of other grains for hay, on account of its greater cost. The United States Department of Agriculture has issued several bulletins on emmer and speltz."

HOME ICE MAKING—Some time last year I read an article saying that any rancher could make ice and giving the name of the chemical to use. I put the article away, but cannot find it now. Can you tell me how ice is made? We are ranchers and can use ice the year around, but have to go to town and buy it at high prices and lose much by the ice melting and have to use it up so soon. It seems to me one could make ice with very little cost and have it whenever it was wanted. Will you kindly tell me if it can be done?—MRS. H. A. H., Fort Bragg, Cal.

Ice manufacture is much more difficult than we should judge you believe it to be. The chemical used is ammonia, which is compressed and cooled and then permitted to expand suddenly, giving off such intense cold when it expands that it freezes water. This has to be done by machinery in inclosed areas. The ammonia, save for leakage, can be used over and over again. A small plant, capable of making 600 pounds of ice in 12 hours, will cost $600. The cost of operation, however, outside of fuel and power, will be small. We are mailing you the names of two manufacturers of ice-making machinery, to whom you can explain your conditions and get definite information regarding the cost and nature of a small plant, provided you use enough, or could sell enough, to make it worth while.

BEAN TURBINE PUMP

for Deep Well Work

Install a Bean Turbine Pump and your water problem is solved. It does the work when other types of pumps would be useless.

AUTOMATICALLY WATER-BALANCED, a feature every pump owner will appreciate.

PLENTY OF BEARINGS — they are placed every five feet. This insures perfect alignment and makes possible highest speed and greatest efficiency.

LINE SHAFT IS CENTRAL TO PUMP — entirely outside of discharge pipes and never comes in contact with water. No sand or grit can get in the bearings.

THREE PIPE DISCHARGE—the pipes being simply and securely bound together. This means strength, yet sufficient flexibility to insure satisfactory work in wells that are not perfectly straight.

DIRECT CONNECTED TO MOTOR—if desired.

Send for further information if you're interested in deep well pumps.

Bean Spray Pump Co.
West Julian Street
San Jose, Cal.

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT, with List of Inventions Wanted and Prizes offered for inventions, sent free. PATENTS ADVERTISED. FREE
WANTED—NEW IDEAS
Send for our list of Patent Buyers.
VICTOR J. EVANS & CO., 836F, Washington, D. C.

TRADE MARK REGISTERED 1873
VALVOLINE OIL
For Gas Engine Cylinders, Tractors and Caterpillars.
Valvoline Oil Co.
San Francisco Los Angeles Portland Seattle

Answers for Farm Problems

STATE OFFICES.—Could you give me the names of all the bureaus, boards, commissions and departments of the State Government in California? —F. C., Halfmoon Bay, Cal.

Get the State Blue Book at your public library and it will give you the information you desire. You might also write to the Secretary of State, Sacramento, asking for the names of other offices created since the issuance of the last Blue Book, if you insist upon a complete list. Those given in the last Blue Book that relate to agriculture more or less directly, are: State Department of Forestry, Sacramento; Fish and Game Commission, San Francisco; State Board of Agriculture, Sacramento; State Conservation Commission, San Francisco; State Dairy Bureau, San Francisco; State Horticultural Commission, Sacramento; University of California (including the College of Agriculture and Agricultural Experiment Station), Berkeley; University Farm School, Davis; State Veterinarian, Sacramento; State Water Commission, Sacramento. You can get more explicit information in the Blue Book, and if future Legislatures are like the last few the above list will be very incomplete before an awfully long time.

SOWING COVER CROPS.—I have a small piece of land in Contra Costa county with some fruit trees only planted last fall 25 feet apart. Between them are tomatoes eight feet apart. The ground is all clean cultivated, but dry for 5 or 6 inches from the surface. There is no chance for irrigation. I want to put in a small piece of alfalfa and some burr clover, the burr clover for green manure to plow under in the fall. Would it be a good idea to sow the seed in the dry ground now and depend on the first rains to bring it up, or should I wait until after the rain before sowing the seed?—J. P., Berkeley, Cal.

We would advise sowing the seed at once so that the clover can get as early a start as possible. Burr clover is an excellent thing for a cover crop, especially in a rather cold location. If you want to branch out a bit and if you are not in a cold location, plant some vetch and rye,or vetch and barley for a cover crop. Vetch and wheat or barley makes a fine hay. Sour clover also promises well in your location as a cover crop. Plow under the cover crop as late in the spring as is consistent with maintaining good water conditions in the soil and be sure to plow it deeply. Disk it thoroughly to cut up the green stuff and compact the soil to prevent loss of moisture by evaporation. Occasionally the cover crop proposition is made troublesome by the difficulty in securing enough water for both trees and cover crop where rainfall alone is depended upon. It is possible to use up too much of the rainfall by the cover crop and in those conditions it would be better to have little winter growth and conserve the rainfall by cultivation. Lack of sufficient rain where no irrigation is practiced also makes the growing of catch crops like tomatoes risky sometimes, even with young trees. What to do or not do with cover and catch crops in orchards is usually a matter of judgment based on conditions. Where possible, we believe it much better to plant alfalfa in the fall and let it get as well established during the winter as possible. This is particularly true where no irrigation is practiced. However, if your observation is that fall planted alfalfa winter kills where you are, you will have to plant after the worst frosts are passed in the spring. Otherwise get your alfalfa in for the earliest possible start in the fall.

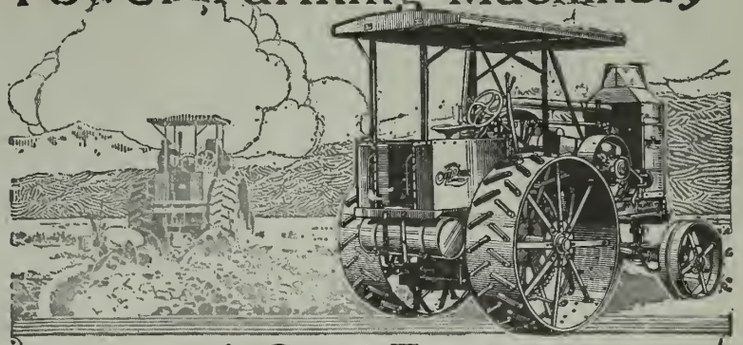
BIRDS AND FRUIT—Can you suggest some ideas to keep birds away from fruit trees, especially blue jays? —G. M. P., Nevada City, Cal.

A boy and a shotgun provide the best bird discouragers that we know of, and with blue jays especially we are inclined to believe that most other methods would fall short. The blue jay has a disposition a good deal like a crow and crows are said to keep away from any place where a dead crow is hanging as a warning. This plan does not work with small birls and we do not know what effect it would have on blue jays. Sometime ago an apparatus was being sold which would shoot off cartridges every half hour or some such period to convince birds that somebody was after them. Owing to the expense the benefits would depend upon the value of the fruit saved. As you probably know, bright pieces of tin, or small mirrors hung in trees to reflect the sunlight as they swing to and fro, scare some birds. Strips of red flannel tied to the trees often do the same. Over strawberry beds cross strings like a spider web about 18 inches up frequently convince birds that a cage or trap is there waiting, but after all, boys and guns seem to be worth more than anything else and the farmer with fruit or grain for birds to eat can pretty nearly figure that birds are going to get their share whatever he does.

CAULIFLOWERS, SALT GRASS—How do you raise cauliflowers? Last year and this year my plants grew finely but did not head. This year I planted 100 nice, healthy, large plants on April 1. They grew well and soon became quite large, but up to the present time, when they are more than five months old from time of transplanting, they show no tendency to form heads. They have been watered well and the ground was highly fertilized. I wish you would also tell me how to get rid of salt grass. It is a constant nuisance in my strawberry bed and is rapidly runing my drain ditch. Wherever one cannot use hoe or cultivator it trys to outgrow everything else—F. A. M., Escondido, Cal.

The cauliflower is rather a difficult vegetable to manage and often refuses to head out, even when it seems to have everything in its favor. It is grown much less than it otherwise would be on that account. The presence of salt grass growing so luxuriantly in your soil suggests the presence of rather large quantities of alkali and it is just possible that there is enough alkali to upset the plant, which will not head if it gets any excuse for not heading, although it may not apparently affect the growth. It seems quite likely also that your attempt to grow them in summer may be responsible for lack of heading, as it is very difficult to get plants to head in summer. Try getting plants in the ground, transplanted, right away, or earier next year, so that they will be quite a ways along when the colder periods of the year approach and see if they will head out well, giving them the best of fertilization and irrigation in the meantime. If you can't get them to head, then give it up as a bad job, or go to the nearest and most successful market gardener and find what culture best suits your local conditions. Wickson's California Vegetables, sold by Cunningham, Curtiss & Welch, San Francisco, and other dealers, gives very full details on cauliflower culture and is a very valuable book for all vegetable growers. We give the salt grass up as a bad job. It will be there as long as the alkali is there and we can hardly suggest any way to tackle the alkali under your conditions. Tile drainage, with flooding to wash the alkali down into the drains would help, or good cultivation and occasional flooding to wash the alkali deep down into the soil, provided the soil is open enough for the water to sink into. Otherwise the only thing we can suggest is to keep the roots in the air instead of beneath the surface as much as possible by means of hoe, plow or cultivator. If anybody else can suggest another way, the columns are open.

RUMELY
Power Farming Machinery



A Coast Tractor

The OilPull is especially adapted to coast conditions. You can burn the cheapest and most plentiful fuel, and further, the weather, dust or loose soil won't trouble, if you use the

15-30 Horsepower RUMELY OilPull TRACTOR 30-60 Horsepower

The OilPull is easy to start and easy to operate. It burns cheap stove-tops at all loads. It is throttle governed, so it is efficient and smooth-running. The air intake on carbureter extends high up out of the dust. The OilPull furnishes reliable power for plowing, hauling, roadmaking and all kinds of belt jobs.

Get the OilPull catalog FB18. It's a good book to read.

The GasPull is a leader in gasoline tractors, and there are no better Stationary engines than the Rumely-Falk for kerosene and stove-tops and the Rumely-Olds for gasoline. Every Rumely machine is backed by Rumely service—49 branches and 11,000 dealers. Supplies and parts on short notice

RUMELY LINES

Kerosene Tractors, Gasoline Tractors, Steam Engines, Engine Gang Plows, Threshing Machines, Clover Hullers, Gasoline Engines, Oil Engines, Baling Presses, Cream Separators, Corn Machines, Lighting Plants

RUMELY PRODUCTS COMPANY (Incorporated)
Chicago Illinois
San Francisco, Cal. Portland, Ore.

Insure Your Harness

The worst enemies of leather are dust and sweat. They get into the pores of the leather, dry it up and soon make tugs and breeching unsafe. Protect your harness with

EUREKA
Harness Oil

It seals up the pores and keeps out the destructive elements. It keeps your harness soft, pliable and strong; preserves its original inky-black color. It contains no acid or other injurious ingredients. Dealers everywhere.

Standard Oil Company (CALIFORNIA)

ORCHARD and FARM
ESTABLISHED 1889
IRRIGATION

VOL. 26 OCTOBER, 1914 NO. 10

Issued Monthly at Hearst Building, San Francisco, Cal.
Country Life Publishing Co., Publishers
D. J. Whitney ----------Editor
D. W. Hill---------Advertising Manager
Wm. Tyler Smith--Circulation Manager

Eastern Office,
Wallace C. Richardson (Inc.),
41 Park Row, New York

Middle West Office,
James A. Buchanan,
Marquette Bldg., Chicago

SUBSCRIPTION RATES
By subscription 50c per year, three years for $1.00.
To Canada, by subscription, extra postage 24c per each year. Foreign, by subscription, 36c extra per each year.
10c per copy of all newsdealers.

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

MONTHLY COMMENT

Every month recently Orchard and Farm has given an account of some agricultural organization which has to a certain extent solved the problem of marketing. One month it was the citrus associations, another the Cured Fruit Exchange, and this month is is the Ukiah Farmers' Club, Incorporated, unique among farmers' commercial organizations in California in that its main purpose is to buy goods for its members, while the intent of other California organizations is to sell farm produce of some sort or another. It is only by both selling what he has to sell at a reasonable price and buying what he has to buy in an equally reasonable way that the farmer truly attains the measure of prosperity that he deserves. California farmers in time will both buy and sell through their own effective organizations and it is only a question of time before organizations doing just what the Ukiah Farmers' Club is doing, though they may be managed and conducted under a different system, will be found all over California. And come to think of it, is not the farmer only half free if he sells his crops properly, provided he has to pay two prices for what he buys? Would he not have exactly the same results if he sold his crop improperly at low prices, but was able to purchase what he wanted properly and at low, prices, too? California farmers have partly solved the first part of the proposition; they have hardly touched the second part. Whenever their marketing has been done right, their farms have flourished; they have lived better and they have farmed better; by the time they practice both buying and selling properly, living standards and farming standards will improve doubly, as a second installment of the story of the Ukiah Club will indicate.

The Honest Middleman—In telling these stories of farmers' success in marketing, we wish to shout out continually the fact that the middleman is not a crook, although there are crooks in that business, as in others. We wish to cry aloud that the farmer is not being swindled in the marketing of his goods; he is not being swindled in the purchase of what he buys. The difference in price between producer and consumer is to a certain great extent necessary, and to a certain other extent due to the general slipshod, irresponsible method of doing things and to inefficiency in conducting whatever system of distribution is practiced. The biggest part of the usual program for political, economic and social reform these days seems to be built on the absurd supposition that business and politics are entirely evil and scheming. "If the blind lead the blind, both will fall into the pit." How absurd the program of those whose ideas are ignorance, whose practice all theory! How disastrous such economic leadership! Are we right in such statements? Look at the report of the citrus season on another page. The California Fruit Growers' Exchange, dominating the whole citrus industry of California, lost in bad debts for the year just $335 out of $19,246,757, which means about $1 in every $54,000, even granting that all of that loss was through deliberate crookedness. The grocer with whom you trade loses about a thousand times as much in proportion to the business he does with the common citizen who may perhaps be ranting about the crookedness of business. G. Harold Powell, head of the exchange operating so well, at the last fruit growers' convention tried particularly to impress upon the fruit growers there that the middleman was not a crook, and he used the very small loss of the exchange to prove his point, just as we do here. He said, "Conduct your business along right lines, deal with the right man, see that your dealings are properly protected, and you will not be cheated. If you throw your business to anybody, use no safeguards whatever, and let your broker do whatever he wants in his own way, certainly you will lose, and you will deserve to." The words are ours, the thoughts his, and ours, too. The moral of it all is to straighten out your busines methods, but don't call everybody a crook. When it comes to the word of G. Harold Powell, the head of the largest and most successful farmers' organization in the world, or the word of an ignoramus who blames his failure on the trusts, the middleman, the government and everybody else, we take Powell every time. Our motto is, Get facts about farm business and then attend to business. Our effort is to give facts about marketing for farmers and to build up proper methods. Watch us, and if you disagree with either facts, or theory, speak up —we have lots to learn and we want our readers to learn, too.

The Country Home—At the center of this page, in the place of honor of the paper, can be found a little talk about the most fundamental thing in agriculture, the most fundamental thing in our national life—the home. When Thomas Forsyth Hunt came to California to assume charge of the agricultural department of the University of California, a department getting to be greater than all the rest of the University put together, his ideas were seen to be centered on the human aspects of the farm. And as we observe city and country life, the more plain it becomes that happiness, health, physical, spiritual and mental wellbeing, are all better served in the country than in the city. The welfare of the individual and the welfare of the nation all call for the country. The war has depressed business and manufacture and thousands of men are of necessity thrown out of employment in our cities. What can they do? The work they have done is now not there to do; they live on what they have saved, or drift, but rent goes on, food still costs. There is nobody that can be blamed; it is a natural result of the city system. Improved machinery or methods make obsolete some ways of working, a lot of men are dropped out and are thrown on the world as unskilled laborers, and this will always be the case while improvements are made. The thing is inevitable; no one is to blame; it is the city system, unrelated to politics or social honesty. The illustrations could be continued.

City or Farm—The city man looks forward to being thrown on the scrap heap. The farmer has the home and the work. He works his six or his fourteen hours a day, according to season; but his work changes, and he has his days off, unlike the city workman with his eight hours of routine, day in and day out. He never is out of a job, he has his home and his food; the rent that he pays is always for something that can actually bring him in an income; it is not for merely a place to sleep. His wife and children can be out in the fresh air and sunshine; the city woman is out of doors only after elaborate "fixing up" that makes her as comfortable as a knight in armor. Her fresh air is gathered on concrete sidewalk or on street car; her visits are formal. And as to children, no landlord wants them in the city nowadays, and living in a dry goods box is no life for either man, woman or child, anyway. The city has lots of advantages, sure enough, but it drives a hard bargain for what it gives, and the person who believes he is being swindled by the middleman or otherwise for what he buys or sells could be swindled as bad as he thinks and yet get a better bargain than the man who loves the country and could live in it well, but yet casts his lot with the city. All men cannot live in the country; in fact, few can really make a success there, but better far the country, when one is fitted for it, than the city. The throwing out of employment so many men as a result of the war emphasizes this fact as never before.

Those College Boys—All this stuff is too serious, and it is a serious evil to take oneself too seriously, or anything else very seriously, but it unfortunately is not given to everybody to have the knack of being humorous. In fact, even worse than being serious, is the belief that one can be humorous when it is impossible to be so. We will have to leave the lightness to the story of the doings of the college boys organizing the boys' agricultural clubs and such told of on the opposite page. We can't swear to the accuracy of the details told of in the account, such as the kind of speeches made by the college boy organizers, but this sory has the o. k. of the agricultural faculty. The work has our o. k. Read the story, help them along.

The Country as a Home

—By Thomas Forsyth Hunt—

One hot night recently I lay on the campus of the oldest university west of the Mississippi river and listened while the professor of sociology and others discussed certain rural problems in southeastern United States. One of the speakers stated that the introduction of cotton mills and similar industries into the South was drawing the white population to the cities. The colored people were taking their places on the farms. I disclaim any knowledge of the situation, but if this is occurring, God pity the white man! If the condition continues and becomes general it will be only a question of time until the white man disappears entirely from the region.

If each family of one race of people brings to manhood and womanhood three or more individuals while the race beside it is content with less than two children per family, the result is inevitable. If the families of the native Californian produce less than two children, while the Japanese produce four or five children, the race problem will be solved in California before the Secretary of State gets it solved by diplomacy. One does not need statistics of graduates of women's colleges to determine that large families are not welcome in the cities. He has only to reflect upon the condition of his acquaintances.

One cannot help sympathizing with those who have been instrumental in passing humane child labor laws. Nevertheless, the control of child labor in the cotton mills of the South, under present conditions, is a menace to the existence of the white man in that region if the statement of conditions quoted above be true.

The foregoing has been stated merely to emphasize that farming is the one great industry where children remain a material asset. A farmer with four children who owns a farm and is intelligent, industrious and temperate usually becomes a successful farmer. He is generally able to rear and educate his children well. A considerable measure of his success is due to them. While less so than formerly, even to-day a large part of the labor on American farms is done by persons under twenty-one years of age. A permanent bachelor, or a family without children, is at such a handicap on a farm that it would be better for them to engage in some other occupation.

The chief reason for rearing children on a farm, however, is not that they are a financial asset, but because the training which they get upon a farm in contributing to the family income is their greatest inheritance. On the western plains of Kansas this summer I passed a boy perhaps fourteen years old, perhaps younger, who was taking a load of wheat from the thresher to the elevator. My companion remarked: "That boy is earning $2.50 per day." But the boy was securing much more than $2.50 per day. He was an integral part of the life of the community, and he sat there as proud as a peacock!

Farming is not merely a business enterprise. It is a social institution. It is a place to build a home, because the children are a benefit both to the parents and to society. Unless we learn how to raise children successfully in the cities, which we have not yet learned, country homes are essential to the perpetuity of the race.

It is probably true—I think it is undoubtedly true—that the cities offer to adults, and especially to the mothers, more comforts than does the country. Every young couple, therefore, has to decide whether they are chiefly concerned in their own convenience and comfort, or whether they are going to consecrate themselves to the welfare of their children and to society.

There are several corollaries to this discussion: If a given race desires to perpetuate itself, it must so organize society that children will be welcome. What we need is not merely restriction, but direction of child labor. If we cannot prevent the farmer, as soon as he becomes prosperous, from moving to town, we should at least create conditions by which the man who succeeds him shall also become prosperous. If the increase of the native race depends upon the prosperity of the open country, as appears to be undeniable, then the educational, social and moral conditions of the open country are, or should be, the first concern of society.

"The Students Try to Help"

By Russell R. Lord, Freshman, University of California

Newspapers reflect pretty well the opinions of the communities in which they circulate, and the opinion of the great city dailies seems to be that the "Country Life Movement" is a movement "to make two blades of grass grow where one grew before," and so lower the over-discussed "high cost of living" in the towns.

Suppose, just for fun, that some morning every American farmer would awake suddenly efficient to the extent where he would produce from his strip of earth the maximum of material at the minium cost. Would it then be advisable to call a halt upon all the various movements which make up the country life movement; to close the agricultural colleges and call in all rural workers from their posts?

No. Even if we might magically solve the problem of feeding the hungry towns, the problem of making the country a decent, habitable, hopeful place in which to live a lifetime would still remain. The ideal rural community is such a one whose existence from day to day shall be efficient and enjoyable.

We have all become too accustomed to think of Mother Earth as a gigantic machine which grudgingly gives up the materials of our existence, and of the farmer as a sort of mechanic who operates this machine, not very efficiently. Earth is vitality; the farmer is a very human being who lives and works therewith. The plea of thinkers on rural affairs during the past few years has been for us to humanize this work of rural reconstruction. We are beginning to realize that the most enduring improvement in rural affairs is brought about, not by those who sit in offices and write wordy bulletins, but by those who live simply in the midst of their jobs and mix with scientific dissertations of crop improvement, heated discussions as to the outcome of the fall election and sincere inquiries as to the health of "the family."

The Human College Boy.

Of all human beings who throng this earth, perhaps the most human is the college student. The students of the College of Agriculture have started on their own hook and in their own way a country life movement of their own over California. This is to be a brief account of the different way they are going about it, and the results they are getting.

Last year there was in the college one or two men with the spirit of service. One of these got up at an Ag Club (Agricultural Club) meeting and told the bunch that they ought to be getting out and circulating some of the "dope" which the university was giving them. "This is good stuff we are getting here," they said, hands in pockets. "Why not pass it along to the other fellows all over the State?"

"Great stuff!" was the informal vote of the meeting. After some discussion they decided that the best way to pass the thing along was to organize agricultural clubs in the rural high schools of the State, attend the meetings themselves, keep up a personal correspondence with the members, and, in general, "put some pep into the coming crowd of countrymen." (Pep means ginger, or spirit.—Ed.)

So each fellow wrote to his home high school and asked them if they didn't want a live-wire ag club of their own. The club boys were to engage in competitive crop-growing, it was decided. "There ought to be as much fun in a potato contest as a game of Rugby," was the principle which formed the backbone of their organizations.

The replies from the high schools came in. The great majority were hot for the thing. "Cutting classes" with splendid abandon, the fellows hopped trains and made for a place. There, at a prearranged meeting, a solemn chairman would introduce them as "gentlemen interested in agricultural betterment." Then the audience would settle back resignedly. They had heard such introductions before and knew what was coming—a venerable gentleman with whiskers and a black tie, who would composedly rise and tell them that it gave him great pleasure to address such a promising body of young men; that upon their shoulders rested, etc., etc. But instead arose a snappy youngster who, after a broad grin by way of introduction, launched forth in a sincere, if disconnected manner, such as this:

The Student's Speech.

"By Gosh! This is pep! Had a sad, sad notion that there'd be about myself and another fellow here tonight, and look at the mob!"

The crowd immediately begins to sit up and take notice. Here is something new. The speaker rambles genially on. He tells them that these clubs will prove to them what the fellows up at college already know—"that agriculture is a science, and a blamed good business for a fellow to be in. A man doesn't have to work himself to death to make a living on a farm any more. He can knock off before sunset every day if he gets up early and uses his bean." (Bean is head.—Ed.)

Then he goes on to tell what the clubs will do—raise some selected acreage of some selected crop on a competitive basis. The member producing the most produce at the least cost will win the club's prize—the right to be one of the California boys on the great Transcontinental Tour of California Prize-Winners. These boys will occupy a special car and tour the country de luxe, observing practically every type of farming in the country. They will be royally entertained along the route, and in Washington will meet the President. In addition to this first prize, every boy completing his year's work and handing in the results will be given a free trip to Davis.

Fifty Such Clubs.

In every case the student extension worker returned to Berkeley with an enthusiastic train of clubs behind him. These clubs multiplied until the students were forced to request aid from the Rural Extension Department of their college. Working in co-operation with this department they succeeded in organizing over fifty clubs. In addition to growing crops many of these high schol organizations have held regular agricultural meetings, largely attended. Others have taken part in movements for the benefit of their communities.

And all the time the principle of the human touch was adhered to. Each interested collegian kept up a personal correspondence with some set number of the high school workers. The chairman of the Student Extension Committee, Roy M. Hagen, put in his entire summer visiting the boys on their home farms.

And the results: 367 high school boys in rural California have planted, cultivated, cherished and harvested their crops. Forty-three clubs have succeeded in carrying out a rather strenuous programme of work. The yields are not yet compiled, but it has been a notable fact, according to those who visited the farms of the fellows, that in many cases the boy has beaten the "old man" in size and cost of crop. Many of the results already compiled show an excellent profit. Of this more will be said when the returns are completed.

You should see the extension office in Agricultural Hall. There, on late afternoons, you will find these college men—the "frosh" (Freshmen.—Ed.) filing club correspondence; the sophmore, proudly presuming to boss the process, the juniors and seniors seriously "on the job," corresponding with their men or working out one of the million details that arise when 400 individuals all over California organize into forty clubs and each grow different crops in a different way. The extension office is a pretty busy place. The students who are there are there to help the men who couldn't get to college. And the secret of their success in their work is that they deal with their man by his first name.

Think what that means. Imagine yourself a fellow on a farm, plodding joylessly from sun to sun and season to season. Your one ambition, if you have one, is to escape from the grind. You are convinced that farming is bad business and real life lies where the lights burn bright. Then along comes this college man who believes that farming can be made to yield a life and a living. He writes you very friendly letters about the things they are doing at the university, he drops in at your place once or twice a season to sympathetically commend or condemn your crop. And besides, you know that your acre of corn, or potatoes, or beans, or whatever it is, stands a good show to take you traveling for over a month over the entire United States—imagine this change in your life and the result. Discovering that other folks are interested in you, you begin to become interested in yourself and begin to really live. That's what the agricultural clubs have done for hundreds of farm fellows during the scant year of their existence.

That was last year; this year promises to go far beyond the first in point of achievement.

Money Makes the Mare Go.

When the fellows came back to college this fall they discovered that they faced rather a crisis in regard to their club work. And their problem was the old, old problem of cash. They had promised the boys out on the land that if they successfully carried out their year's work they would be given a pin as a distinguishing and distinguished mark. Besides, there were other things which the extension department could not reasonably be expected to pay for. If the work of making enthusiastic countrymen out of apathetic rubes was to be broadened, dollars must be forthcoming.

From the idea of "getting up something" to supply this deficiency grew the idea of getting up something big—an event so large as to necessitate the co-operation of every single man and woman in the college and so greatly swell the number doing something for the other fellow. They

(Continued on Page Twenty-four.)

PIPE TANKS SILOS

Factories and Drying Yard at Pittsburg, Contra Costa County. Forty Million Feet of AIR DRIED REDWOOD in Stock.

Pipe, Tanks and Silos Made to Order to Fit Your Requirements.
Tell Us What You Want and We Will Tell You the Price.

REDWOOD MANUFACTURERS CO.
813 Kohl Bldg., San Francisco

Programme for Dairy Meeting

Arrangements have been practically completed for the annual convention of the dairy interests of California at Modesto, October 15 to 17, 1914. There will be gathered at this convention members of the California Creamery Operators Association, California State Dairy Association, California Creamery Managers' Association and individual dairymen from all parts of California for the sake of enjoying the programme and the Dairy Show to be held at the same time.

Following is the programme for the convention, as announced by the secretary of the California Creamery Operators' Association, A. P. Ferguson, Turlock, Cal.:

numbers of Orchard and Farm, a large Dairy Show, at which will be an excellent representation of all leading breeds of pure bred dairy cows and dairy equipment of all kinds, from silos and silo machinery down to milk utensils, will be held simultaneously with the convention. This is to be conducted by the Modesto Chamber of Commerce, the Stanislaus County Board of Trade and the publishers of Orchard and Farm, and will serve to attract dairymen from all California and to make this convention the most note worthy of any yet held. Ribbons and prizes will be given winners in the stock show, but no awards will be made

Thursday, October 15, 9:30 A. M.

Address of Welcome----------Geo. J. Wren, Mayor of Modesto
Response ----------E. B. Stowe, Stockton
President's Address----------A. R. Bates
The Creamery Manager and His Patrons---Prof. Gordon H. True, Davis
Our Opportunity----------I. D. Graham, San Francisco
Standards of California Dairy Products------Prof. Leon M. Davis, Davis
Leaks ----------Quincy McBride, Berkeley
Discussion ----------
Appointment of Committees—Resolutions, Finance and Nominations.

Thursday, October 15, 1:30 P. M.

Premium Evil, and Australian Butter------W. H. Roussel, San Francisco
Advantages of Co-Operation in Marketing Dairy Products----------
----------J. P. Murphy, Tulare
Practical Creamery Butter Making----------Robert Holcomb, Winters
General Discussion for Butter Makers--Led by John Sollie, Eureka, Cal.

Thursday, October 15, 7:30 P. M.

Lowering of Butter Grades----------A. Jensen, San Francisco
Competition and Quality in Creamery Work, G. E. Frevert, Salt Lake City
The Responsibility of the Creamery Operator in Relation to the Quality of California Butter----------S. H. Greene, San Francisco

Friday, October 16, 9:30 A. M.

President's Address----------Hon. J. W. Guiberson, Corcoran
The Work of the State Dairy Bureau---F. W. Andrcason, San Francisco
Making a Market for Cal. Dairy Products, S. H. Green, San Francisco
"My Greatest Trouble"----------Experience Meeting, open to all.
Report of Secretary-Treasurer.
Appointment of Committees—Resolutions, Finance and Nominations.

Friday, October 16, 1:30 P. M.

Business Methods in the Dairy-------J. E. Dorman, Salt Lake City, Utah
Building Up a Dairy Herd----------A. S. Goode, Bakersfield
A Department of Agriculure for Cal.—D. J. Whitney, Ed. Orchard & Farm
Dairy Regulations and Supervision from the Consumer's Viewpoint
----------Mrs. A. E. Graupner, San Francisco
Animal Husbandry----------John B. Curtin, Sonora

Friday, October 16, 7:30 P. M.

The Universal Eight Hour Law----------Geo. W. Pierce, Davis
Individual Feeding and Testing of the Dairy Cow, Prof. Van Norman, Davis
The Dairy Sire----------A. W. Morris, Woodland
Dairy Legislation----------S. A. W. Carver, Los Angeles

Saturday, October 17, 9:00 A. M.

Butter Scoring Contest.

Saturday P. M.

The afternoon of Saturday will be devoted to entertainment that will be provided by the citizens of Modesto. This will include an auto ride to various points of interest in Stanislaus county.

Saturday Evening.

Banquet tendered to members by Chamber of Commerce.

The Southern Pacific, Santa Fe and Western Pacific will all give one and a third rates to the convention. The first two will issue regular round trip tickets, the last named will give the usual receipt certificate.

As announced in the two previous

for the commercial exhibits, which latter will have a great educational effect.

As usual, a butter contest will be held in connection with the convention, as indicated in the programme above.

MANY SILOS GOING UP.

Never before in California were so many silos being built as at present. One company, the Redwood Manufacturing Company, is selling three a week on an average, though much of this business is with neighboring States. Among the prominent dairy and stockmen who very recently installed these sios are: Hearst Ranch, Pleasanton; James F. Dunne, San Felipe Ranch, Hollister (two); J. Lansing Lane, Home Grove Farm Hollister; Rancho Dos Rios, Modesto; Huston Farm of Yolo Water & Power Co., Winters; B. L. Wing Woodland; Lewis & Mitchell, Livingston.

A good old-fashioned remedy for barb wire cuts is kerosene and lard—mix well together. To a pint of this mixture add half a teaspoonful of strong spirits of camphor and a half teaspoonful of carbolic acid.

A small sum invested in a good sire for his services will in a very few years mean a large sum in the better quality of the animals handled and fed.

A Message From President Wilson

In a Letter to John T. Waldorf of San Francisco, He Urges the Voters of California to Elect James D. Phelan United States Senator.

PRESIDENT WILSON

JAMES D. PHELAN

THE WHITE HOUSE
WASHINGTON

September 11, 1914.

My dear Mr. Waldorf:

I was most gratified to hear of the nomination of former Mayor James D. Phelan for United States Senator. He has been in close touch with the administration in Washington, and has heartily supported the policies which have been inaugurated for the benefit of the people,---policies which, I am pleased to be informed, have met with very general approval.

The work has been well begun, and it is manifestly important for its successful continuance and prosecution that the administration should not be refused support in the Senate and House at the forthcoming election.

Therefore, I appeal not only to Democrats, but to all independent citizens to rally to the support of the men who have expressed a willingness to sustain the administration and carry on the work designed for the benefit of all. It is not so much mere party success that concerns the average citizen as sound and efficient government, and a party can best deserve credit by giving the best service to the country.

Sincerely yours,

Woodrow Wilson

James D. Phelan—

Three times Mayor of San Francisco.

Presented renewal of franchise of old Geary street railway, San Francisco, thus making present successful municipal line possible.

Appointed first woman who ever held an important public position in San Francisco.

Served as regent of the University of California.

Commissioner to secure re-enactment of the Geary Asiatic Exclusion Law.

Commissioner for Hetch Hetchy legislation before Congress to secure a mountain water supply for the cities around San Francisco Bay.

Commissioner to Europe by appointment of President Wilson to support the United States Government's invitation to foreign countries to participate in the Panama Pacific Exposition.

Secured appropriation of $500,000 for United States building at the Panama Pacific Exposition.

Declined ambassadorship to one of the great European nations, preferring service at home.

Led in fight for a new charter for San Francisco, which insured home rule, civil service reform, responsible government and municipal railroads.

Raised standard of pay for laborers in the city employ.

Head of the San Francisco Relief Committee in the disaster of 1906. Appointed by the President custodian of the relief fund aggregating $10,000,000.

Worked and spoke before the Legislature for the enactment of an anti-alien land ownership law.

Experienced, capable and untrammeled, he would have but one client in Washington, the people of his native State.

STOCK AT SALE

The Holstein consignment sale which is to be held at Hanford, October 28, 1914, by A. W. Morris & Sons, McAllister & Son, R. F. Guerin, G. A. Hewitt and T. J. Gilkerson, has been attracting increasing attention as the time approaches for it. Regarding the stock consigned by Mr. Hewitt of Hardwick, the owner writes: "I have consigned 12 females and two bulls to the breeders' sale to be held in Hanford, October 28, at a great sacrifice. All cows are well bred and have fine conformations and are as good individuals as can be found anywhere. They are granddaughters of some of the most famous sires in the breed. All are cows with the exception of two heifers and have given 70 to 80 pounds of milk per day on dry feed and some of them have have given over 23,000 pounds in the milking period. All are bred to Jetze of Oakwood Romeanna, a son of the $5,000 imported bull Jetze Zwarthak, who was never beaten in the show ring. Zozo Colantha of Sunnydale, whose dam tested 5.4, is a fine young bull with good lines and very promising."

The Newhall Land & Farming Co. of this city, who operate several large ranches in this State, have now on the way from the East a lot of Hereford and Shorthorn bulls for use on their ranches next year. Mr. Mayo Newhall believes in having Eastern bulls here in California six months before they are required. If other large ranches would do this also, better results would be obtained.

It is to be regretted that the Hawkins herd of Shorthorns from Hollister was not on exhibition at the State Fair this year. Sam Walker, who has charge of this herd, says that a few unforseen circumstances occurred a few days before the shipment was to be made which necessitated their staying at home this year. Next year this herd no doubt will be seen on the fair circuit.

The hay markets recently show that fancy hay sells readily and that all other kinds are dull and very hard to move. Apparently the warehouses are so full that there is hardly room for more and buyers are very well stocked up.

Watering horses as often as possible is a good plan. A little at a time is better than excess at long intervals.

BRENTWOOD IRRIGATED FARMS

"Best in the West"

Hog Raising Should Bring Handsome Profits on Brentwood Irrigated Farms

Over half the pork products consumed in California are shipped in from the East. The demand is growing faster than the supply.

Brentwood Irrigated Farms are located east of Mt. Diablo in Eastern Contra Costa County, 60 miles from the million people who live around San Francisco Bay.

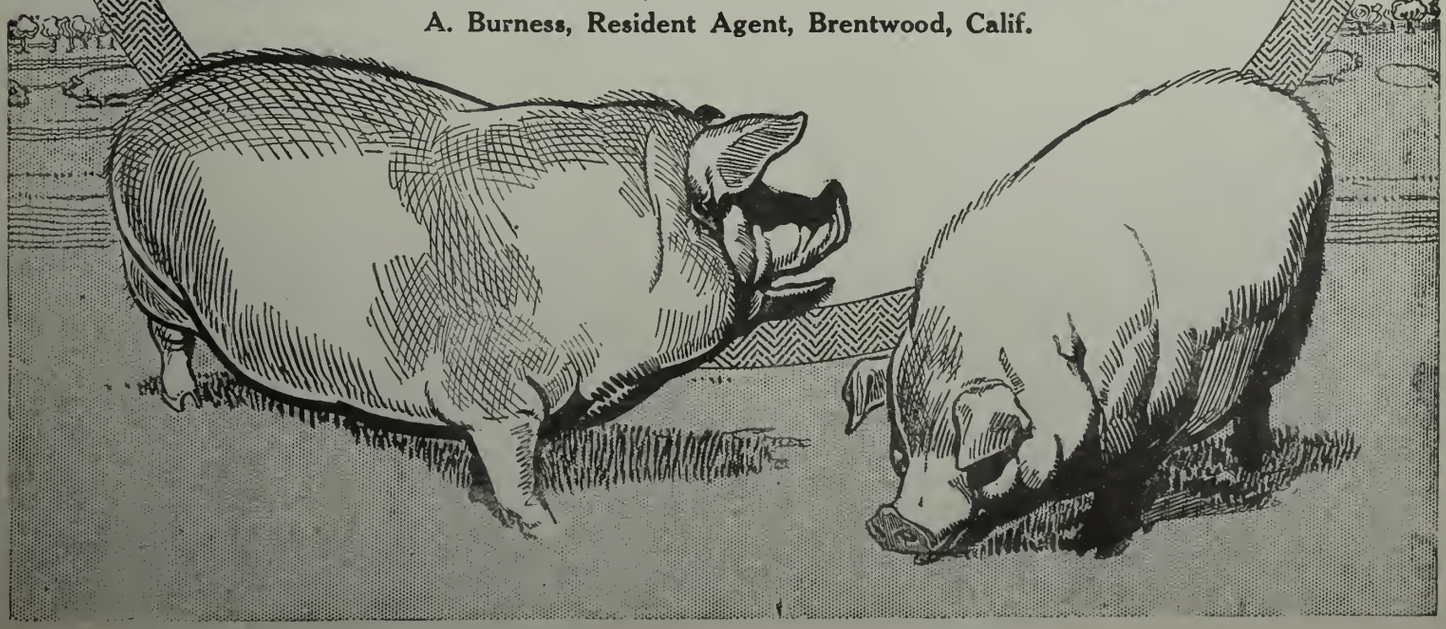
Complete irrigation system, of the highest type of construction.

With the fertile soil, ample water, excellent climate and ready market, Brentwood Irrigated Farms give large returns on alfalfa, fruits, nuts, vegetables and dairy, pork and poultry products.

Price $300 an acre including water right. Write for illustrated pamphlet.

Balfour, Guthrie & Co., 350 California Street, San Francisco

A. Burness, Resident Agent, Brentwood, Calif.



Livestock Awards at State Fair

BEEF CATTLE—SHORTHORNS.

Exhibitors: Thornton S. Glide, Davis, Cal.; T. B. Gibson, Woodland, Cal.; Hopland Stock Farm, Hopland, Cal.; Howard Cattle Co., San Francisco, Cal.

Bulls—Three years or over—1, Gibson; 2, Howard. Two years—1, Glide. Senior yearling—1, Glide; 2, Howard. Junior yearling—1, Howard. Senior calf—1, Glide; 2, Gibson; 3, Hopland; 4, Gibson; 5, Howard.

Cows—Three years or over—1, Gibson; 2, Howard; 3, Glide. Two years—1, Glide; 2, Gibson; 3, Howard. Senior yearing—1, Glide; 2 and 3, Howard. Junior yearling—1, Hopland; 2, Glide; 3, Hopland. Senior calves—1, Glide; 2, Hopland; 3, Glide. Junior calves—1, Glide; 2, Howard; 3, Hopland.

Aged herd—1, Glide; 2, Gibson; 3, Howard. Breeders' young herd—1,

"Salvador Forest King," Grand Champion Shire.

Glide; 2, Hopland; 3, Howard. Calf herd—1, Glide; 2, Gibson; 3, Hopland. Group, four animals get of one sire—1, Glide; 2, Hopland; 3, Gibson. Group, two animals, either sex, of one dam—1 and 2, Glide; 3, Gibson.

Championships—Junior, Senior Grand champion bull, Glide; Junior, Senior and Grand champion cow, Glide.

Herefords.

The only exhibitor was the Simon Newman Co., Newman, Cal. They received all prizes except the junior bull calf, which was owned by the University of California. This calf won in class and was also made junior champion.

Red Polled.

The only exhibitor was Reevy R. Cartwright, Angels Camp, Cal., who received all the prizes.

FAT CATTLE—SHORTHORNS.

Exhibitor: University of California, who received all the prizes.

Herefords.

Exhibitors: Simon Newman Co., Newman, University of California.

Champion steer or spayed heifer—University of California.

Hereford steer or spayed heifer—Two years and under three, Newman; one year and under two, University; six months and under one year, University.

Aberdeen—Angus.

Exhibitor: University of California getting all awards.

Grades and Crosses.

Exhibitors: T. S. Glide, Davis, Cal.; University of California, Davis.

Champion steer or spayed heifer—University; grand-champion steer or spayed heifer, any age or breed—University; grades and crosses, steer or spayed heifer, two years and under three—Glide; one year and under two—Glide; six months and under one year—1, University; 2, Glide.

DAIRY CATTLE—JERSEYS.

Exhibitors: C. P. Hembree, Monmouth, Oregon; Jersey Queen Farm, Modesto, Cal.; C. D. Hayworth, Mayhews, Cal.; W. J. Hackett, Ceres, Cal.; S. F. Williams, Chico, Cal.; T. B. Wulff, Modesto, Cal.; Rancho Dos Rios, Modesto, Cal.; J. G. Stahl, Merced, Cal.; J. B. & J. E. Thorp, Stockton, Cal.; University of Davis, Davis, Cal.; D. T. Wieland, Thalheim, Cal.; N. H. Locke & Co., Lockeford, Cal.; J. T. Miller, Chico, Cal.; Guy H. Miller, Modesto, Cal.; Moorland Stock Farm, Thalheim, Cal.; W. J. O'Brien, Stockton, Cal.; C. N. Odell, Modesto, Cal.; J. M. Bomberger, Modesto, Cal.; D. F. Conant, Modesto, Cal.; Eaton & Hughes, Santa Rosa, Cal.; W. W. Fisk, Davis, Cal.; J. A. Goodall, Turlock, Cal.

Bulls, three years or over—1, Hembree; 2, Miller; 3, Locke. Two years—1, Thorp; 2, Conant; 3, Fisk. Senior yearlings—1, Hembree; 2, Hayworth; 3, Miller. Junior yearlings—1, Hembree; 2, Locke; 3, Rancho Dos Rios. Senior calf—1, Hembree; 2, University; 3, Thorp. Junior calf—1, Hembree; 2, Hembree; 3, Locke.

Cows, four years old or over—1, Hembree; 2, Miller; 3, Locke. Three years—1, Thorpe; 2, Locke; 3, Hembree. Two years—1, Locke; 2, Locke; 3, Fisk. Senior yearling heifer—1, Hembree; 2, University; 3, Locke. Junior yearling heifer—1, Hembree; 2, Hembree; 3, Goodall. Senior heifer calf—1, Hembree; 2, University; 3, Fisk. Junior heifer calf—1, Williams; 2, Fisk; 3, Hembree.

Aged herd—1, Hembree; 2, Thorp; 3, Locke. Young herd—1, Hembree; 2, Locke; 3, Thorp. Calf herd—1, Hembree; 2, Locke; 3, Rancho Dos Rios.

Get of sire—1, Hembree; 2, Hembree; 3, Locke. Produce of dam—1, University; 2, Thorp; 3, Miller.

Championships: Senior, junior and grand champion bull—Hembree; Senior, junior and grand champion cow—Hembree.

Holstein—Friesian.

Exhibitors: Laura J. Frakes & Bros., Sutter Creek, Cal.; University of California, Davis, Cal.; J. K. Fraser, Denair, Cal.; Frank Hatch, Modesto, Cal.; Stanford University, Vina, Cal.; Moorland Farm, Thalheim, Cal.; A. W. Morris & Sons, Woodland, Cal.; James McGillivray, Sacramento, Cal.; J. A. Pelanda, Salida, Cal.; Pure Gold Stock Farm, Elk Grove, Cal.; Ben Stetson, Napa, Cal.

Bulls, three years and over—1, Morris; 2, 3 and 5, Stanford; 4, McGillivray. Two years—1, Morris; 2, Stetson; 3, Morris. Senior yearling—1, Morris; 2, Pure Gold; 3, Stanford. Junior yearling—1, Stanford; 2, McGillivray; 3, Stanford. Senior calf—1, Morris; 2, Morris; 3, University. Junior calf—1, Morris; 2, Stanford; 3, Morris.

Cows, four years old or over—1, McGillivray; 2, Morris; 3, McGillivray. Three years—1, Morris; 2, Stanford; 3, Morris. Two years—1, Morris; 2, Morris; 3, Hatch. Senior yearling heifer—1, Morris; 2, McGillivray; 3, Morris. Junior yearling heifer—1, Stanford; 2, Hatch; 3, Morris. Senior heifer calf—1 and 2, Morris; 3, Stanford. Junior heifer calf—1, Stanford; 2 and 3, Morris.

Aged herd—1, Morris; 2, Stanford; 3, Morris. Young herd—1, Morris; 2, Stanford; 3, Morris. Calf herd—1, Morris; 2, Stanford; 3, Morris. Get of sire—1 and 2, Morris; 3, Stanford. Produce of dam—1, Morris; 2, McGillivray; 3, Morris.

Champions—Senior, junior and grand champion bull, Morris; Junior champion cow, Stanford; Senior and grand champion cow, James McGillivray.

Guernseys.

Exhibitors: Elliott-Brant Rancho, Owensmouth, Cal.; Dr. W. J. Henderson, Berkeley, Cal.; A. B. Humphrey, Mayhews, Cal.; Ed E. Johnson, Turlock, Cal.; C. G. Lathrop Estate, Stanford University, Cal.; W. M. Leland,

"Pansy's Bertie Lad," Second-Prize Aged Jersey.

Berkeley, Cal.; W. H. Saylor, Ceres, Cal.

Bulls, three years old or over—1, Leland; 2, Elliott; 3, Saylor. Two years—1, Saylor; 2, Humphrey; 3, Lathrop. Junior yearling—1, Lathrop; 2, Humphreys; 3, Lathrop. Senior bull calf—1, Elliott; 2, Henderson; 3, Humphrey. Junior calf—1, Henderson; 2, Elliott; 3, Humphrey.

Cows, four years old or over—1, Saylor; 2, Lathrop; 3, Elliott. Three years—1, Saylor; 2, Humphrey; 3, Elliott. Two years—1, Saylor; 2, Lathrop; 3, Elliott. Senior yearling heifer—1, Elliott; 2, Elliott; 3, Lathrop. Junior yearling heifer—1, Saylor; 2 and 3, Lathrop. Senior heifer calf—1, Lathrop; 2, Saylor; 3, Elliott. Junior heifer calf—1, Lathrop; 2, Johnson; 3, Lathrop.

Aged herd—1, Saylor; 2, Lathrop; 3, Humphrey. Young herd—1, Lathrop; 2, Saylor. Calf herd—1, Lathrop; 2, Saylor. Get of sire, 1 Lathrop; 2, Saylor; 3, Henderson. Produce of dam—1, Lathrop; 2, Saylor; 3, Henderson.

Champions—Senior and grand champion bull, W. H. Saylor; Junior champion bull, Dr. W. J. Henderson; Senior champion cow, W. H. Saylor; Junior and grand champion cow, Elliott-Brant Rancho.

Dutch Belted.

Exhibitors: Mrs. Jennie Strader and U. G. Strader, Ceres, Cal., who received all the awards.

SWINE—BERKSHIRES.

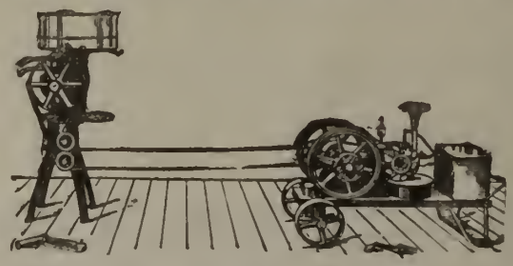
Exhibitors: Pure Gold Stock Farm, Elk Grove, Cal.; C. E. Barrows, Los Molinos, Cal.; A. B. Humphrey, Mayhews, Cal.; Oak Grove Dairy Farm, Woodland, Cal.; T. W. Goethe, Walsh Station, Cal.; H. L. Murphy, Perkins, Cal.; G. A. Murphy, Perkins, Cal.; J. L. Gish, Laws, Cal.; F. W. White, Elk Grove, Cal.; University of California, Davis, Cal.; S. S. Day, Sacramento, Cal.; Cala Grove Farm, Manteca, Cal.

Boar, two years—1, White; 2, Barrows; 3, Humphrey. Eighteen months—1, Oak Grove; 2, Goethe. One year—1, Humphrey. Six months—1, White; 2, Humphrey; 3, Murphy. Under six months—1 and 3, Humphrey; 2, Gish.

Sow, two years—1, White; 2, Humphrey; 3, White. Eighteen months—1, 2 and 3, Humphrey. One year—1 and 2, Humphrey; 3, White. Six months—1, University; 2, White; 3, Humphrey. Under six months—1, Humphrey; 2, and 3, University of California.

Herd, over one year—1, Humphrey; 2, White; 3, Humphrey. Under one year—1, Humphrey; 2, White; 3, Humphrey. Over one year, bred by exhibitor—1, Humphrey. Under one year 1, Humphrey; 2, White; 3, Humphrey. Get of sire—1, Humphrey; 2, White.

International Harvester Cream Separators



THERE is money enough in the one advantage of the saving in cream and butter fat, to pay for a cream separator the first year. This is specially true if you buy a close skimming, durable International Harvester cream separator—Lily, Bluebell, Primrose or Dairymaid—which leaves less than a drop of cream in each gallon of milk.

These separators have all the points which make cream separators good. They have the balanced bowl, the self-adjusting neck bearing, the tool steel spindles, the bronze bushings, the spiral gears, the low supply can, the high skim milk spout, and the open, sanitary base, without which no separator can be satisfactory.

Some dealer near you handles I H C separators. If you do not know, write us and we will tell you who he is. We will also send you our cream separator catalogue which tells you why it pays so well to buy an I H C separator.

The I H C Line

GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Peg, Spring-Tooth, and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

International Harvester Company of America
(INCORPORATED)
Crawford, Neb. Denver, Col. Helena, Mont. Portland, Ore.
San Francisco, Cal. Spokane, Wash. Salt Lake City, Utah

Copro

Look for this name on every sack

If Your Dealer Can't Quote Prices Write Us Direct

Pure Cocoanut Oil Cake Meal

An Economical and Palatable Food For Dairy Cows, Hogs and Poultry

The thorough digestive qualities of the protein in Copro assures a high nourishing value and a low percentage of waste. Mixed with farm products, Copro provides a perfectly balanced ration at the minimum of cost.

Free Sample and a copy of our booklet containing valuable information on the subject of "Successful Feeding" sent gladly on request. Write today.

Address Department C
PACIFIC OIL & LEAD WORKS
Manufacturers
155 Townsend Street San Francisco, Cal.

QUALITY
BERKSHIRES

OUR BERKSHIRES ARE NOW BETTER THAN EVER.

They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.

Send for Catalog.

Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

Produce of dam—1, Humphrey; 2, Barrows. Fat Barrow—1, Humphrey; 2, Murphy. Pen of three fat Barrows—1, Humphrey.

Champions—Champion boar, Oak Grove Farm; champion sow, F. M. White; champion boar bred by exhibitor, C. W. Barrows.

Duroc Jerseys.

Exhibitors: J. K. Fraser, Donair, Cal.; Ed E. Johnson, Turlock, Cal.; J. W. Mowrer, Turlock, Cal.; J. E. Thorp,

"Lucon," First-Prize Three-Year-Old Percheron.

Stockton, Cal.; University of California, Davis, Cal.; John P. Daggs, Modesto, Cal.; Elmer Lamb, Ceres, Cal.; Rucker & Coffin, Fair Oaks, Cal.

Boars, two years and over—1, Daggs; 2, Fraser; 3, Johnson. Eighteen months—1, Rucker & Coppin; 2, Johnson. One year—1, Daggs. Six months—1, University; 2 and 3, Fraser. Under six months—1, University; 2, Lamb; 3, Thorp.

Sows, two years and over—1, Rucker & Coffin; 2, Thorp; 3, Fraser. Eighteen months—1 and 2, Fraser; 3, Thorp. One year—1 and 2, Daggs; 3, Thorp. Six months—1, Lamb; 2, Thorp; 3, Rucker & Coffin. Under six months—1, Johnson; 2, Fraser; 3, Daggs.

Boar and 3 sows, over 1 year—1, Rucker & Coffin; 2, Daggs; 3, Fraser. Under one year—1, University; 2, Daggs; 3, Fraser. Over one year, bred by exhibitor—1, Daggs. Under one year—1, University; 2, Daggs; 3, Fraser. Four pigs of any age, produce of one sow—1, University; 2, Johnson; 3, Daggs. Pen of 3 borrows—1, Daggs; 2, Johnson. Special of the Duroc-Jersey Association, barrow under one year—1, Fraser; 2, Johnson; 3, Mower. Under one year—1, Fraser; 2, Johnson; 3, Mower. Boar and 3 sows owned by exhibitor—1, Daggs; 2 and 3, Johnson.

Champions: Champion boar bred by exhibitor, University; champion sow, Lamb.

Poland Chinas.

Exhibitors: University of California, Davis, Cal.; G. C. Hollingsworth Woodland, Cal.; Robert Browning, Woodland, Cal.; W. Bernstein, Hanford, Cal.; W. A. Young, Chico, Cal.; M. Bassett, Hanford, Cal.; A. L. Bassett, Hanford, Cal.; A. M. Henry, Farmington, Cal.

Boars, two years old and over—1, Bernstein; 2, Bassett; 3, Young. 18 months—1, Browning. 1 year—1, Bernstein; 2, Henry; 3, Bassett. Six months—1 and 2, Bassett; 3, Young. Under six months—1, Bassett; 2, Beckman; 3, Bassett.

Sows, two years old and over—1 and 2, Bernstein; 3, Bassett. 18 months—1 and 2, Bernstein; 3, Bassett. Six months—1, Young; 2, University; 3, Browning. Under six months—1, Bassett; 2, Bassett; 3, Beckman. Herd over one year—1 and 2, Bernstein; 3, Bassett. Under one year—1 and 2, Bassett; 3, Young. Under one year, bred by exhibitor—1 and 2, Bassett; 3, Bernstein. Get of sire—1, Bassett; 2, Browning. Produce of sow—1, Bassett; 2, Beckman.

Boar any age and bred by exhibitor—Bernstein.

Sow any age and bred by exhibitor—Bernstein.

Champions—Boar and sow and boar any age bred by exhibitor, Bernstein; champion sow any age, bred by exhibitor, M. Bassett.

Yorkshires.

Exhibitor: University of California, Davis, Cal.

Chester Whites.

Exhibitors: C. B. Cunningham, Mills, Cal.; University of California, Davis, Cal.; Frank Miller, Woodland, Cal.

Boars, two years old and over—Cunningham. Eighteen months—Cunningham. Six months—University of California. Under six months—1, 2 and 3, Cunningham.

Sows, two years old and over—1, 2 and 3, Cunningham. Eighteen months—Cunningham. Six months and under one year—1, 2 and 3, University of California. Under six months—1, 2 and 3, Cunningham.

Boar and 3 sows, under one year—1, University; 2, Cunningham.

Four swine, get of same boar—1 and 2, Cunningham.

Four pigs, produce of same sow—1 and 2, Cunningham.

Barrow, any age—University.

Champions—Champion boar, University; champion sow and boar, any age, bred by exhibitor, Cunningham.

Hampshires.

Eaton & Hughes, Santa Rosa, Cal., received all awards.

SHEEP.

Exhibitors: Bullard Bros., Woodland, Cal.; Bishop Bros., San Ramon, Cal.; University of California, Davis, Cal.; T. S. Glide, Davis, Cal.; Kaupke Bros., Woodland, Cal.

Rambouillets.

Bullard Bros., being the only exhibitor received all awards.

Shropshires.

Rams, two years or over—1, Bishop; 2, Glide. One year—1 and 2, Bishop; 3, Glide. Under one year—1, Bishop; 2 and 3, Glide.

Ewes, two years old or over—1, Bishop; 2 and 3, Glide. One year—1 and 2, Bishop; 3, Glide. Under one year—1, Bishop; 2, Glide; 3, Bishop.

Flock of any age—1, Bishop; 2, Glide. Pen—1, Bishop Bros.; 2, Glide. Champions—Champion ram and ewe, Bishop Bros.

Hampshires.

Ram under one year—1, University; 2, Kaupke Bros.; 3, University.

Ewes, two years old or over—1 and 2, Kaupke Bros. Under one year—1, University; 2 and 3, Kaupke Bros. Flock—Kaupke Bros. Pen—Kaupke Bros. Champions—Champion ram and ewe—University of California.

Southdowns.

University of California, being the only exhibitor reecived all awards.

Dorset Horns.

T. S. Glide received all awards.

Merino Type.

Pen of three rams, two years old or over, Bullard Bros. One year—1, Bullard Bros.; 2, Glide. Under one year—1, Glide; 2, Bullard Bros.

Pen of three ewes, two years old or over—Bullard Bros.; one year and under two—Bullard Bros. Under one year—1, Bullard Bros.; 2, Glide.

Middle Wool Type.

Pen of three rams under one year—

"Lorena Korndyke," Grand Champion Holstein.

1, Bishop Bros.; 2 and 3, Glide. Two years old or over, Bishop Bros.

Pen of three ewes, one year and under two—Bishop Bros. Under one year—Bishop Bros.

Middle Wool Breeds.

The University of California received all awards.

Angora Goats.

Florence Kite of Redding, Cal., being the only exhibitor received all awards.

Milch Goats.

Winthrop Howland of Redlands, Cal., being the only exhibitor received all awards.

DRAFT HORSES—PERCHERONS.

Exhibitors: Dunham McLaughlin Co., Oakland, Cal.; T. D. McLaughlin Co., Oakland, Cal.; C. A. Penniger, Stockton, Cal.; William Bond, Newark, Cal.; O. H. Brandt, Shellville, Cal.; H. C. King, Galt, Cal.; H. G. Learnard, Stockton, Cal.; Whitehall Est., Inc., Tracy, Cal.; G. J. Albrecht, Oakland, Cal.; M. Bassett, Hanford, Cal.; Elliott-Brant Rancho, Owenmouth, Cal.; Ruby & Bowers, Roseville, Cal.

Open class, aged stallions—1, Dunham; 2, Bassett; 3, Whitehall. Three years—1, Dunham; 2, Whitehall; 3, T. D. McLaughlin. Two years—1, Dunham; 2, McLaughlin; 3, Dunham. One year—1, Penniger; 2, Miller; 3, Elliott.

Mares, four years or over, with foal at feet—1, Learned; 2, Bond. Four years or over—1, Penniger; 2, Learnard; 3, Bassett. Three years—1, Ruby. Two years—1, Ruby; 2, Bond. One year—1, Learnard. Foals, under one year—1, Learnard; 2, Bond. Get of sire, four animals under four years—1, Penniger. Produce of dam, mare and two animals—1, Penniger; 2, Bond.

State class, aged stallions—1, Bassett; 2, Whitehall. Three years—1, Whitehall. Two years—1, Albrecht; 2, Learnard; 3, Penniger. One year—1, Penniger; 2, Miller; 3, Elliott. Mare and foal—1, Learnard; 2, Bond. Aged mare—1, Penniger; 2, Learnard; 3, Bassett. Three years—1, Ruby; 2, Whitehall. Two years—1, Ruby; 2, Bond. One year—1, Learnard. Foals—1, Learnard; 2, Bond. Get of sire, four animals under four years—1, Penniger. Champion stallion, Whitehall estate; Champion mare, Penniger.

Shires.

Exhibitors: Henry Wheatley, Napa, Cal.; E. W. Westgate, Rio Vista, Cal.; McCormick Bros., Rio Vista, Cal.

Open class, aged stallion—1 and 3, Wheatley; 2, McCormick. Two years—1, Wheatley; 2, McCormick. Mares with foal at feet—1 and 2, Wheatley. Four years—1, Wheatley. One year—1 and 2, Wheatley. Foal under one year—1, 2 and 3, Wheatley. Produce of dam—1 and 2, Wheatley. Champion stallion and mare, Wheatley.

State class as above, except for foals under one year—1 and 3, Wheatley; 2, Westgate.

Clydesdales.

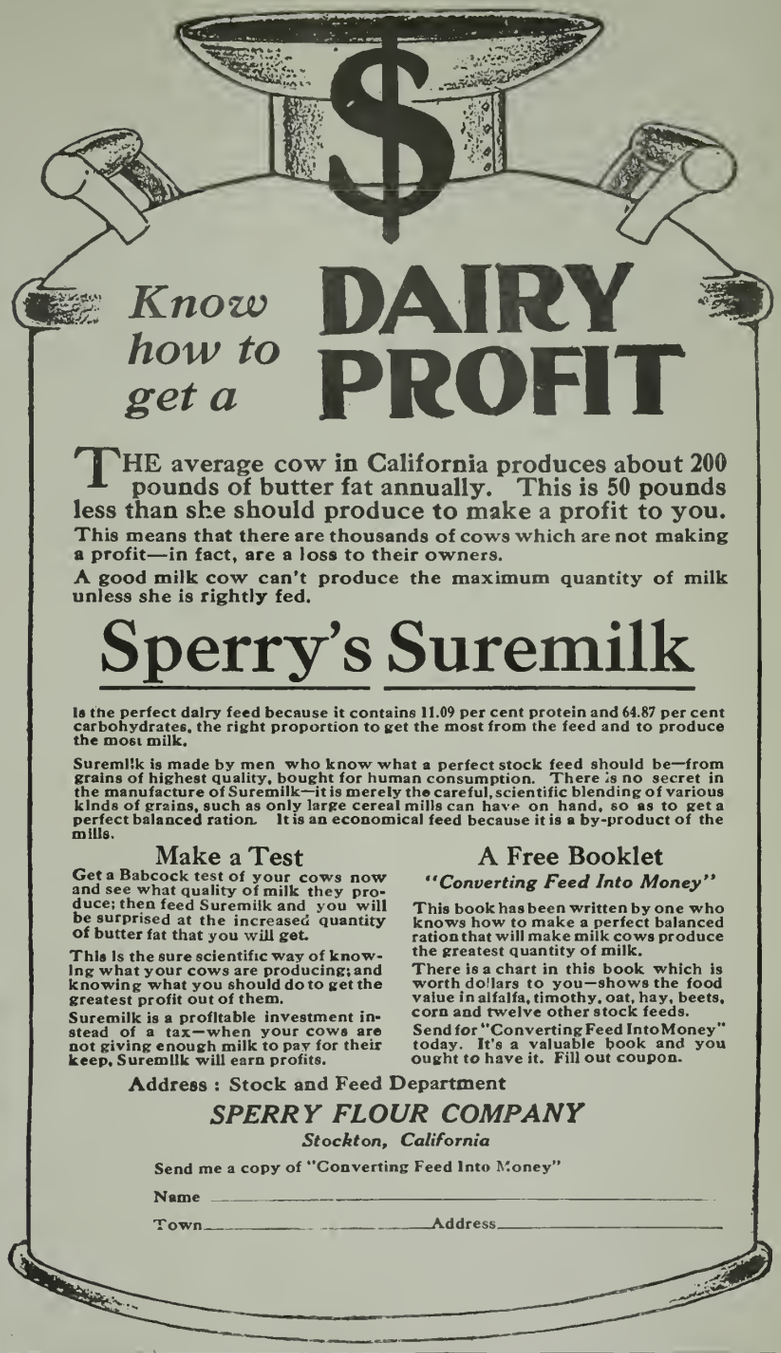
Exhibitors: Ruby & Bowers, Roseville, Cal.; O. H. Brandt, Shellville, Cal.

Mare with foal—Ruby. Four-year-old mare—1, Brandt; 2, Ruby. Foals—1, Ruby; 2 and 3, Brandt.

Jacks, Jennies, etc., Breeders' Class.

Exhibitors: Dill Bros., Clements, Cal.; Eaton & Hughes, Santa Rosa, Cal.; Dan Emmett Jr., Somis, Cal.; Frank Hart, Colterville, Cal.; A. R. Grieve, Davis, Cal.; M. A. Merrill, Willows, Cal.; C. W. Blevins, Williams, Cal.; W. J. Greer, Edenvale, Cal.

Champion jack—Blevins; champion jennie, Merrill. Jacks, four years and over—1, Blevins; 2, Emmett; 3, Merrill. Three years—1, Merrill. Two years—1, Merrill; 2, Greer; 3, Blevins. One year—1 and 2, Greer. Jennies, foal at feet—1, Dill; 2, Greer; 3, Merrill.



HOPLAND STOCK FARM

Registered Shorthorns, Shropshire Sheep, Berkshire Hogs, Holstein-Friesian Cattle, Hungarian Ponies, Poultry.

HOPLAND, CAL.

FOR SALE

Rambouillet, Shropshire, Oxford and Cotswold Rams

Also a few Pure Bred Shropshire Yearling Ewes.

After August twelfth these can be seen near Soda Springs, Idaho. It will pay you to see our rams before buying. They are the kind you want and prices are right.

KNOLLIN & FINCH,
Soda Springs, Idaho
or
A. J. KNOLLIN,
South Omaha, Nebraska

Breeding Percherons in France

By William McLaughlin, Dunham-McLaughlin Co., Oakland, Cal.

A little section of France, about one-twentieth the size of the State of California, has become the most famous agricultural section of the world through the breed of horses which is produced there. The district in which Percheron horses are bred and raised in France is only about the same size as six of our counties in California. This little district of La Perche begins about seventy miles southwest of Paris and is located between the valleys of the Seine and Loire. A small river called the Huisne traverses the district from end to end. It is one of the most curious things in live stock breeding that so small a section should become so famous.

The Percheron district has no large cities within its borders. It is beyond doubt the richest and most flourishing agricultural section in the world to-day.

Percheron horses have improved the breeds of draft horses in every civilized country in the world. The Percheron horse seems to make a better cross with foreign breeds of horses than does any other known draft breed. It is undoubtedly due to this fact that the Percheron horse is so widely distributed.

I might trace its origin back, as do the historians of the Percheron breed in France, to the time of the Crusades. I might tell you that these same historians lay a great deal of stress upon the Oriental blood that was introduced at that time, and later, into the Percheron breed; but, the things in which we are interested are not so much what has been done in the past as how things are at the present time.

The breeders in the Percheron district give a great deal of credit to the soil and the climate of their Province. They say that a Percheron horse in its purity, with its strength, its force, its vigor, its harmonious outline, cannot be bred and developed in any other section so well as it can be within the limits of La Perche. Whether or not their contention is true, it is a fact that we do not find in France, in any of the other horse breeding sections, draft horses of equal merit to those we find in the Percheron district, notwithstanding the fact that the Percheron horse has been persistently used for many years in improving the other draft breeds of that country.

The Percheron country is divided into what they call small farms and big farms. The small farmer has from one to four mares and is the actual breeder. The small farmer sells his male colts almost at the time they are born and delivers them at the time they are weaned to the big farmer, who feeds them and grows them until they are two years old. He keeps the filly foals in order to replace his older brood mares when they are sold. About two-thirds of the farmers in the Percheron district consist of these small farmers. They practice economy in its most stringent form. Everything they have must produce something. The mares must all work. They must not only produce a colt every year, or nearly so, but they must do the work on the farm as well. The mares are never kept in idleness; as as soon as a mare misses having a colt the second year she is sold and her place is taken by one of the younger fillies. While the mares are worked hard, yet the farmer always feeds them well, so that they have the strength and the vigor to produce a good, big, strong, healthy colt and give plenty of milk on which to raise it until weaning time.

The big farmers in the Percheron district are the owners of the stallions. Every spring they buy of all the small farmers every male colt sired by their horses that they consider sufficiently good to develop into a stallion. These big farmers, almost without exception, live in the valley of the Huisne. Their land is nearly all in permanent pasture and it is here that the Percheron stallion grows and develops at liberty until he is rising three years old. These colts, in a climate almost the same as ours, are left at liberty at all times, winter and summer. I think the health and vigor of the Percheron horse is due to a great extent to his never being kept, when he is young, in close, badly ventilated stables. While these colts are always kept at liberty in the pastures, yet they are always fed with grain, so that they are at no time stunted in their growth.

The development of the Percheron horse undoubtedly is due, to a great extent, to the soil and climate, yet the breeders, the men who choose he stallions, who select the mares, and who raise them until maturity, have a great deal to do with it. These men do not only have an intense love for their Province and are proud of its most important industry, but they are lovers of the animals they breed. They look after them carefully; they treat them well. They do their utmost to see that each animal has the proper care, the proper attention, the proper feed, the proper nourishment, in order to bring it to its most perfec development. The love of their breed of horses is bred in them. The son follows in the footsteps of his father and attempts to improve upo what his father has already accomplished. Theirs is a section where the young men do not leave their birthplace and go to the cities, but where they stay in the locality in which they were born, because they love it and appreciate the opportunity they have in producing the best breed of draft horses in the world. A fact which possibly influences to a great extent the young man to stay in the country is because, at the bottom, the French farmer is economical, and he loves very much the dollars which flow into his pockets from the other countries of the world for the horses which they breed and raise.

The French government has for many years taken a great interest in the breeding of Percheron horses. Through its system of shows, through the pensions and approval given to the best stallions, it has had a great influence upon the improvement of the Percheron breed.

Only about five thousand colts, considered sufficiently good for registration, are bred each year in the Percheron district. In spite of the continuous drain upon the breeding stock of the country, the Percheron horse today is better than he ever was. His size has been increased, while the qualities which have made him famous throughout the world have not diminished.

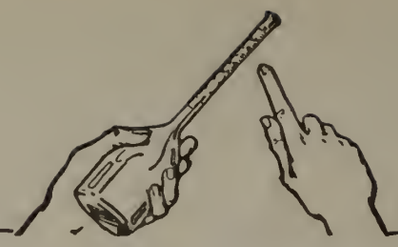
LIVESTOCK NOTES

The Federal quanantine for sheep scabbies has been lifted from part of Utah, the whole state now being entirely free from this disease. The only part of the country now under quarantine consists of portions of California and Colorado and the whole state of Texas. By the efficient work of the United States Bureau of Animal Industry and the California State veterinarian, California has almost eradicated this disease within her borders, as is the case with Texas fever, and it is merely a question of time before both of these serious diseases will be a thing of the past.

There has always been great danger in purchasing dairy cattle in some sections of introducing tuberculosis into the herds with cows that have not been tuberculin tested, or with cows that have been given certificates of freedom from disease by unreliable veterinarians who either did not test the cows, or knew that they had tuberculosis without testing them. Some dairymen have made a practice of cleaning out their herds in this way. Certain parts of Illinois have been noted for this unfortunate condition and a Federal quarantine for bovine tuberculosis has therefore been imposed on five Illinois counties, from which no cattle can be sent out for dairy purposes or for breeding unless a certificate of a satisfactory passing of the test is granted by the United States Bureau of Animal Industry. Certificates of veterinarians will not do. The state government is co-operating in the quarantine.

On September 1, 1914, there were 8,560 silos on Texas farms, with an original cost of $4,520,000. Nearly two-thirds of these were erected in the past year and the progress in the future will be even greater, according to all indications. The average size of the silo in Texas is increasing, being 120 tons now, against 100 tons a year before, the average of those being erected at present being 140 tons capacity. The largest silo hold 800 tons of silage. In one part of the state before silos were erected the cost of feeding dairy cows was $10 per month. With silos it is $3.50. A large number of the silos are used for beef production and their increase is needed to keep up the number of beef cattle.

Persons at all interested in sheep will find of much value a bulletin recently isued by the United States Department of Agriculture on Domestic Breeds of Sheep in America. The ilustrations of individuals of all breeds are excellent and an excellent summary is given of the nature and fitness of each breed for various conditions.



Get All the Butter Fat

To operate at *full efficiency* and deliver *all* the cream, your separator must be lubricated with an oil exactly suited to its construction. Many oils form "gum", thereby clogging the delicate mechanism of the separator, and thus causing irregular spinning of the bowl, reduction of speed and consequent loss of cream.

Standard Hand Separator Oil

is made especially for cream separators by oil experts of 40 years experience who have studied the detail construction of the separator—this in order to produce an oil exactly adapted to the purpose. Your separator will do better work, last longer and need fewer repairs if lubricated with Standard Hand Separator Oil. *No matter what you pay, you cannot buy a better oil for the purpose.* Dealers everywhere.

Standard Oil Company
(CALIFORNIA)

EVERYTHING FOR THE BUILDER
Bargains in Building Material
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.
Carload Lots a Specialty.
H. McKEVITT & SON
1849 Mission St.,
Near 14th St. San Francisco.

CALIFORNIA BUNGALOW
(Portable)
BUILT RIGHT PRICE RIGHT
If you expect to invest $1,000 to $2,000 in a house, PAY US ONE-HALF AND WE WILL BUILD YOU A BETTER HOME.
Call and inspect buildings or write for our free catalogue of K. P. C. Bungalows.
KENYON PACIFIC CO., No. 3 FRANKLIN STREET, SAN FRANCISCO.

BLACK LEG
LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50
Discounts: 250 doses, 10 p. ct.; 500 doses, [illegible] p. ct.
Use any injector, but Cutter's simplest and [illegible].
Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccines ([illegible] or any other), as it affords less protection than fresh.
Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly.
THE CUTTER LABORATORY, Berkeley, California.

When answering advertisements, please mention "Orchard and Farm."

Opportunities With the Holsteins

ORCHARD AND FARM: In view of the extraordinary quality of the offerings at the California Breeders' Consignment Sale to be held at Hanford on October 28, 1914, it might be appropriate to say a few words about the opportunity which will be here presented to the breeder both large and small and to those who intend to start in this great business in a small way and build up a herd.

Breeders of Holstein cattle throughout the country have uniformly made money. There is scarcely an exception to this statement. I might mention, on the other hand, scores of incidents in which men and women who have started in a very small way have made fortunes out of Holstein cattle and are now among the biggest and most influential breeders in the United States.

John Arfman, in whose herd there are more 30-lb. cows than any other herd in the country, started with two cows, for which he paid $250 a few years ago. His first sale of a bull calf netted him $25. Recently he sold a salf for $11,300, and a half interest in his herd bull for $25,000. Francis M. Jones paid $250 for two heifers seven years ago and sold two offspring of those heifers for $16,000 and now has a herd reputed to be worth $125,000. E. C. Shroeder four years ago started with $5,000 and last year he made seven 30-lb. records, including a number of world's records.

Prof. E. H. Eckles of the University of Missouri states that the present herd of Holsteins owned by the University of Missouri, numbering 35 head, are all descended from four cows which were purchased by him in 1902 at a cost of $450. Animals from this herd have been sold for breeding purposes for at least five times the cost price and the present herd is worth at least ten times the cost of the foundation stock. I might mention numerous instances along these same lines, but lack of space will not permit me.

I wish although to give a couple of instances where cows of good individuality and breeding were at one time sold for a song and have since broken world's records, and in some cases have sold for a fortune. Johanna de Kol Van Beers sold for $65 when a calf and not long ago she resold for $7,000, and two of her sons brought $24,130. Sadie Pontiac Korndyke was bought by Mr. Salmon of Glenfield, N. Y., five years ago for $500 and has since made the owner over 600 per cent annually for him. Right in our own State we have incidents like this. Morris & Sons bought Riverside Sadie De Kol Burke and Aralia De Kol a few years ago for a song, comparatively speaking. Both have broken world's records, and a grandson of the former was recently sold by them for $2,000 as a calf.

Banking interests realize that Holsteins are a safe and profitable investment. They are loaning money at the present time to parties who wish to purchase cattle when they are refusing to loan money for any other purpose. In the most of the Eastern States bankers are encouraging the farmers to borrow money for Holsteins. Minnesota bankers have stated that they intend to make Minnesota the biggest Holstein State in the Union and will furnish farmers with funds with which to do it. Many banks have even gone so far as to distribute Holsteins to farmers at cost which they themselves purchased.

This is a sale which those looking for foundation stock cannot afford to miss. It is to be hoped that the quality of the offerings will be appreciated and that the great industry of breeding and selling Holstein cattle will be encouraged. The reputations of the consignors, which are A. W. Morris & Sons of Woodland, McAllister & Son of Chino, R. F. Guerin of Visalia, G. A. Hewitt of Hardwick and T. J. Gilkerson of Stratford, are behind their offerings. They guarantee to the public that every animal will be sold as represented and that each bid offered is a bona fide bid. These animals will positively be sold to the highest bidder, no matter how low the price. We, as consigners, do not expect big prices for our stock. We do not expect this to be the last sale of its kind to be held, and we would rather have a satisfied customer than receive a price out of proportion of the value of our offerings. If we can make money for our customers by selling them stock that will make them money, we ourselves will be the gainer, perhaps not this year, but in future years. If quality and number of stock offered and honesty and integrity of the consignors mean anything to the Holstein buying public of the Pacific Coast, this sale should be a success.—JAMES W. McALLISTER JR.

GOOD DOG LAW.

The usual thing in many states is to have the law fixed so as to discourage sheep raising and encourage dog raising. In other words, the state considers dogs of more public benefit than sheep, for it permits dogs to run at large, and when sheep killing starts, as it is sure to do with dogs running loose, it protects the dog owner in every way possible and ties the hands of the sheep owner as well as law can and yet retain the appearance of respectability.

In Virginia a law has been passed which ought to fix things well and give the sheep owner an even break. Heretofore, if the sheep owner whose sheep were being killed, shot a dog, the owner of the dog could sue for damages no matter where the dog was killed or how strong the suspicion that the dog was responsible for the death of the sheep. At the same time the owner of the sheep was permitted to sue the dog owner for the death of his sheep, but he had to prove that the dog was responsible for the killing, which was a delightful task, since such killing is mostly done during the night and nobody but the sheep owner could be present to prove that any special dog did the killing, even in the rare cases when the sheep owner would find the bloody work going on. In every state where such is the legal situation it is absolutely impossible for a sheep owner to protect himself except by staying with the sheep all the time, and the result is that sheep on small farms in many sections have almost disappeared.

The new Virginia law gives the right to each county to make it unlawful to let a dog run loose and the sheep owner or anybody else can kill any dog loose and without human company on any land except the land of the owner. This should enable the swift eradication of all wandering, irresponsible dogs and give the farmer a chance to keep a few sheep if he wants to. Dogs are excellent animals when well behaved, but they are as bad as irresponsible children when allowed to follow their own sweet will. Others than sheep owners would welcome such a law in every state.

A strip of ribbon two inches wide and three miles in length will be used by the Department of Live Stock of the Panama-Pacific International Exposition in the badges to be given the winners in the various classes. These are in addition to the $450,000 already set aside for livestock prizes and not including $227,000 to be given in purses at the two racing meets for harness horses.

SALE EXTRAORDINARY
HEREFORDS
October 19, 1914, at Harris, Missouri

Repeater VII, Undefeated Grand Champion Bull of America in 1913. Bred and Owned by Harris & Sons, Harris, Mo.

This will be one of the greatest sales of its kind ever held in America. It should make Hereford history. No other herd can boast of five grand champions at its head. Here they are:

BULLS IN SERVICE

Beau Donald 5th ---------- 86142
Repeater ---------- 289598
Gay Lad 6th ---------- 316936
Prince Perfection ---------- 342054
Repeater 7th ---------- 386905

For Catalog Address

HARRIS & SONS - - Harris, Mo.

Real Home Comfort

The cheery warmth of a

PERFECTION OIL HEATER

keeps the entire household cozy and comfortable. Burns nine hours without refilling. Easily cared for.

Dealers everywhere.

Write for booklet, "Warmth in Cold Corners."

Standard Oil Company
(CALIFORNIA)
San Francisco

"The Students Try to Help"

(Continued from Page Seventeen.)

further decided that if this proved possible, the common effort toward an altruistic end would unify their college as never before, and that this unified effort would result in something creditable to the college of agriculture and the university.

And so they decided to hold in the Greek Theatre on Friday and Saturday, October 16 and 17, a gigantic "Fruit and Flower Mart," an event in size and spirit incomparable with anything ever held before. Immediately a representative committee of thirty was appointed to sound out the sentiment for such an undertaking. There are upwards of five hundred agricultural students scattered over San Francisco, Oakland, Berkeley and thereabouts, but the thirty succeeded in personally interviewing every one of them in his own rooms. The sentiment was strongly in favor of the mart. This fact assured, a rousing rally of ag students was held in the old track enclosure. Scarcely a member of the college was absent. A big bonfire blazed higher than the bleachers, the students cheered mightily and the college leaders talked from an old farm wagon drawn within the glow of the blaze. Again the case was stated; again they were told that if the mart be attempted it meant hard work for every man in the college; and finaly the question was put: "Are you for it?" The bunch leaped to its feet and signified it was for it—strong.

Just to show that the enthusiasm was not altogether of the bonfire variety, the various chairmen mounted the wagon and read off their committees — exhibits, entertainment, transportation, decoration and publicity. When they had finished each of the five hundred knew they were on a definite committee assigned to do a definite thing.

The Plan of the Mart.

The general plan of the mart is this: The State will be appealed to for donations of fruits and flowers. The appeal will be the same as that issued to the student body, "Help Us Help the Other Fellow." Indications are that there will be sufficient fruit and flowers to fill every alternate tier of the great Greek Theatre. The donated exhibits will be sold at reasonable prices to those attending. The proceeds from their sale, together with that realized from the sale of refreshments and the like, should produce cash in a quantity calculated to hum as never before.

Furthermore, the mart is being planned so as to keep everybody mighty glad they came. Student stunts will occupy the enormous stage, a band and orchestra will alternate for dancing; something will be doing every moment. A campaign of publicity is being initiated which is expected to attract some 20,000 residents of the bay cities. College will be closed during the two days of the mart, the students of Davis will attend in a body and, best of all, every boy who successfully grew a crop and kept account of its growth will be there. On Saturday the Transcontinental Tour of the Prize-Winners will start from the stage of the Greek Theatre, parading amid much joyous tumult to the station where they will entrain for the East. There will be some time!

What's He Made Of?

In his address at the rally Dean Thomas F. Hunt said, in part: "I have been associated with college students the most of my life. I know them like a book. And I want to say right now that the college student is the most wonderful mixture of irresponsibility and foolishness and idealism and good common sense in existence. We of the faculty believe in this combination and are behind you in this movement. Go right ahead! You will make a great thing of it!"

And the students are gong ahead with their mart—going ahead fast. It is a student endeavor and it will reflect the student—the foolish, irresponsible, idealistic, sensible student. Certainly the Mart will not be the usual type of fruit exhibitions where impressive gentlemen with yellow streamers solemnly pass judgment on the exhibits while the por plain people wander vaguely about, looking as if they wished they were elsewhere. There will be no signs such as "DO NOT HANDLE." There will be noise and joy and a high old time.

But under the foolishness and irresponsibility will be the idealism of "Help Us Help the Other Fellow" and the sound common sense of five hundred students which will bring it to triumphant consumation.

So all you who read this and who know where there is some fruit or flowers which will help make this thing a success, and so help the boy out between the fences to better things—all of you pack that fruit into something or other and ship it to the "Fruit and Flower Mart, National Ice and Cold Storage Company, Oakland, California." Your exhibit will be carefully stored until the great day and then placed along with all the others from your county—a fine ad for your fruit, by the way. But that's not the point. We ask you to help us by donations and personal presence on the sixteenth and seventeenth because by so doing you will be treating yourself to a dandy time, and be helping us to help the other fellow.

LAST PERCHERONS SHIPPED.

Part of the last shipment of Percheron horses to leave France were exhibited at the State Fair by the Thos. B. McLaughlin Importing Company. They were bought by Jas. McLaughlin and were said by him to be the finest lot of horses ever sent to America from France. There were twenty-seven horses shipped altogether, twelve being left in Maryland, the remainder coming to California. Having only recently arrived, the time was too short to fit them for the show ring properly, although their quality is apparent. In the shipment was the three-year-old Laos, who won in his class at Nogent; also the third and fourth two-year-olds of the great Nogent show. The steamer bringing the horses over was chased by a German cruiser. Other horses purchased at the same time are held in France. The Thos. B. McLaughlin Company has only recently been formed, though Thos. McLaughlin, being one of the McLaughlin Bros., has long been in the draft horse business. The headquarters of the company will be at Oakland.

Bulletin No. 145 of the University of Nebraska has been issued on Handling Silage. It contains a lot of valuable information on silo filling, removing silage for feeding and such matters. Special emphasis appears to be placed on silage handling from pit silos, which are practically unknown on the Pacific Slope. The bulletin is published at Lincoln, Nebraska. The same university has also published another bulletin showing that ground wheat is one-third as good again as whole wheat for hogs. The wheat ration is also greatly improved by the addition of tankage.

Experience shows that silage is not a safe horse feed. While it is used to some extent yet the feeder must be very careful in the examination of silage that is fed to the horses.

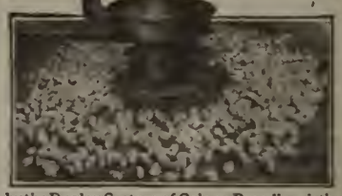
PLANS FOR DRAFT HORSE ASSOCIATION.

The California Draft Horse Breeders' Association, at a meeting in Sacramento during State Fair week, developed plans for a great increase in work. One important step was the reduction in membership dues from $5 per year to $1 per year, so that every breeder of draft horses will feel able to join. All should send name and money to the secretary, J. I. Thompson, University Farm, Davis. The association also planned to conduct a consignment sale of pure bred draft stock at the time of the annual meeting, which next year will be at the Exposition grounds in San Francisco. This sale will be largely for persons with only a few animals which they wish to sell, rather than for importers or professional draft horse men, though they also will likely consign some stock. A number of other methods are to be used to help the raisers of draft animals in California.

Curtis H. Lindley of San Francisco, who operates a well equipped ranch near Santa Cruz, has now on the way from the East a beautiful lot of imported Guernsey cows which are coming from Pennsylvania. The Guernsey is becoming more popular every day in California. This breed's association has put up the largest appropriation for special prizes of any dairy breed to be awarded at the Panama-Pacific Exposition next year.

Hopland Stock Farm was a new exhibitor with their Shorthorn cattle at this year's State Fair. Their Shorthorns under the guiding hand of Ed Brown were in nice condition. They made a very creditable showing, winning several prizes.

$1500 Worth of Chicks Raised Around One Stove



by the Duplex System of Colony Brooding, is the report of one of the country's big poultrymen.

This wonderful method of brooding is the only logical and practical way to Save Every Healthy Chick Hatched; if free from organic disease; Bring Them All to Maturity, Positively Eliminate White Diarrhoea and Cut Out All Drudgery Connected With Brooding.

Kinnear Poultry Co., Sussex, N.B., says, "The

Duplex Combined Brooder Stove and Ventilator

is easy to operate and perfectly satisfactory with results."

This is the stove that will not smoke or throw off fumes—has regulator that controls flow of oil—keeps temperature at correct point—heats and ventilates perfectly at all times.

Made in 3 sizes to meet all requirements. To get further information about the Duplex System

Send for Free Book on Brooding

and learn how to Cut Labor and Expense of Poultry Raising in Half, as well as to Keep Chicks Healthy and Alive, Until Maturity. Other interesting literature free.

Special Freight Prepaid Proposition for those living West of the Rocky Mountains.

DUPLEX COLONY BROODER CO.
Box 606 ROCKFORD, ILLS.

Ohio Improved Chester White Swine

A few April and June pigs ready for immediate shipment. October farrows ready December 1. Everything immunized against hog cholera. Am booking orders for December deliveries now. C. B. CUNNINGHAM, Mills, Cal.

California

AND PACIFIC COAST

Nature's Exposition

AND ALL-THE-YEAR VACATION GROUND

Yosemite National Park
Mariposa Big Tree Grove
Shasta Resorts
Del Monte and Monterey Bay Points
Paso Robles, Santa Barbara and Coast Country
Los Angeles and Its Beaches
Pasadena, Riverside, Redlands and San Bernardino.
Byron, Paraiso and Gilroy Hot Springs
Santa Clara, Pajaro and Salinas Valleys
Lake County Resorts and Springs
Lake Tahoe Region
Klamath and Crater Lakes
Kings and Kern River Canyons
Santa Cruz Mountains and Big Trees
Sacramento and San Joaquin Valleys
San Francisco, Oakland, Berkeley and Bay Region
Portland, Tacoma and Seattle

For Fares, Train Service and Descriptive Booklets Ask Agents

Southern Pacific

THE EXPOSITION LINE—1915—FIRST IN SAFETY

News From Live Stock Men

The Bond sale of Shorthorn cattle and Percheron horses owned by Wm. Bond, Newark, was hardly up to the owner's expectations. The main cause may be laid at the door of the financial conditions at this time. The great European war which started after this sale was announced had a tendency to keep buyers at home. Later this country may benefit from the result of this war, but at present conditions are far from being prosperous. Stock men are a more or less conservative class and when things are not really up to the standard they are usually the first class of people to tighten up. Many of the sale stock changed hands at fair prices. The Newhall Land & Farming Co. purchased all the bull calves. Mr. Mayo Newhall told the writer that they were as good a bunch as they ever purchased. They were bred right and were very typical of the breed. Public sales in this State are more or less in their infancy and it is hardly understood by the average stock man why they are made. Some believe they are made to dispose of the surplus stock which are not needed by their owner. This sale was a clear dispersal sale, everything to be sold. If Mr. Bond did not realize as much as he expected, this sale indirectly will do him a world of good. He has been widely advertised and people know now where to go when they are in the market for either Shorthorn cattle or Percheron horses. Among the leading buyers at the sale were G. A. Murphy and H. L. Murphy, each of whom purchased a number of cows of the Ashburner stock, which has been bred to a considerable extent along dairy lines, the Murphys for two generations having been raising Shorthorns of the milking type. Although Mr. Bond has permitted the calves to do all the milking, the Murphys will use cows for both milk and beef. S. A. Haxby of Melrose and M. B. Pierson of Perkins among others, also made some good purchases.

New Shorthorn Breeders.

The White Company of San Francisco are contemplating increasing their livestock interests by putting on their farms at Tracy 40 head of registered Shorthorn cattle. White & Co. have been interested in the Shorthorn business for several years back in the East. They were known as White & Smith, St. Cloud, Minn. This firm purchased the old N. P. Clark herd of Shorthorns several years ago. This herd was known on both continents as one of the very best of its kind anywhere. Its show yard record stands without a parallel in Shorthorn history for the last quarter of a century. White & Smith have now dissolved partnership and it is the part of the herd owned by Mr. White that is to be shipped to California next month. This lot of cows headed by a Whitehall Sultan bull, one of the very best that was ever bred at Anoko farms, should be a valuable addition to the Shorthorn herds of this State. Frank Smith, who has been handling this herd for several years, will bring them to California. White & Co. have been trying to secure young Smith to remain here to manage the herd, but he has decided to go back and assist his father with his Shorthorns at St. Cloud, Minn. Mr. More, who has been interested in a general way with these cattle and is a brother-in-law of Mr. White, will assume the active management of this plant in this State. Three of the herds of Shorthorns which have been showing at the State Fair purchased their herd bulls from this herd. Should things go along all right, some of these cattle will no doubt be shown at the Panama-Pacific under the head of California owned Shorthorns.

The Harris Sale.

The Harris sale of Hereford cattle which will be held at Harris, Mo., October 16, will be well worth the trip across the continent for anyone who is in the market for good Herefords. O. Harris has for the last 20 years been a tower of strength to the advancement of the Hereford breed. When others weakened, Harris grew stronger. If one will read the awards at the Great American Royal Show held at Kansas City every year, the name of Harris is oftener mentioned than any other. Perhaps his crowning success was at the St. Louis Fair, 1904, when he won in premiums a few dollars less than $10,000. After the show he sold ten head for $20,000 to Cargill & McMillian, Chicago, with the agreement that he would keep out of the show ring for the following three years. He accepted the proposition and in 1908 he again came back into the show ring. For the last six years he has been a consistent winner in all the great shows of the Middle West. This year the grand-champion Hereford bull and the grand-champion Hereford cow are owned at the Harris Farm. These two head have been consistent winners from calfhood up until this year, when they both have been made champions of the breed. They were bred and raised at the Harris farm. The cattle to be sold next month are, as Mr. Harris stated in his own words, "the best lot that ever went through an American sale ring." Every one is a good one. He has drawn heavily from the cow herd and nothing but the tops are going into the sale. These cows will be in calf to one of his five herd bulls (every one of these having once been a grand-champion). The bull classes are very strong, almost any of them are fit to head the best herd of Herefords in the country. It takes nerve to make a sale of this kind, but Overton Harris has it. It is the duty of every Hereford breeder in the country to attend this sale, even if he should not be a buyer. O. Harris deserves this for the great work he has performed in modeling the present day Hereford.

E. B. McFarland of San Mateo has been branching out rather heavy lately in the Berkshire world. His recent purchase of the young boar "Band Master II, junior champion at the Iowa State Fair, along with the young sow also junior champion, will make a valuable collection to the Berkshires he now owns. He has also purchased three brood sows from Professor Curtis, Ames, Iowa, and three other sows from one of the best breeders in Wisconsin. In all this makes nine sows and a boar which he has added to his herd. S. Cole, one of the field men for the Iowa Homestead, says this is one of the best shipments of Berkshire hogs which has ever been shipped West. Some of them will no doubt be seen at the Panama-Pacific next year.

The Ione Coal & Iron Co. recently secured from the East 40 head of registered bulls, 20 Herefords and 20 Shorthorns. These bulls are to be used on their ranch at Ione. More and more, stockmen of Califor· 'a are beginning to realize the advantage of registered bulls.

J. A. Downing, Suisun, Cal., recently attended the Berkshire sale at Elmendorf Farms, Ky., and the Corsa sale at Whitehall, Ill. While at these sales he purchased 4 or 5 splendid Berkshire sows, which are now on the way to California.

50 Cows Average 717 Pounds Butter

This is the average of the 50 cows that have completed yearly semi-official tests to date in our herd.

Did you ever consider what it would mean to place a young bull in your herd, bred in lines that are producing these results? It will mean increased production and value for every animal in the herd. He will produce the kind of stock that are in the greatest demand at high prices.

INDIVIDUALITY, PRODUCTION and TRANSMITTING ABILITY are essential in the choice of a herd bull. These are the qualifications of the young bulls that we offer as low as $150.00.

Engage your calf for use next fall. Your inquiries will be given prompt attention.

A. W. MORRIS & SONS CORPORATION

Holstein Friesian Cattle — Woodland, California

For Sale

Shropshire, Rambouillet and Cotswold-Rambouillet Rams.

1,200 Head

These rams are splendid types of their respective breeds. Their sires are imported rams from the best flocks in England, Canada and United States. They are priced right in any quantity to suit purchasers.

For particulars address

D. C. Wheeler, Inc., Reno, Nevada

Sugar Valley Shropshires

Are Not SURPASSED for QUALITY by Any FLOCK in AMERICA

I ALWAYS HAVE ON HAND choice flock headers, breeding ewes and choice show stock that cannot be surpassed in quality at the prices I ask. In my flock runs the Best Blood of the Best English Flocks. IF YOU ONCE BUY OF ME YOU WILL ALWAYS BUY. Come and see my flock; it will please you. My farm is easy to reach from Chicago. If you want first-class Shropshire Sheep write me before buying at extravagant prices.

I won Champion Ram, First on Pen of Ewe Lambs and First on Flock at the last International Show with stock of my own breeding.

L. KAMMERER, Proprietor, BRODHEAD, WIS.

Shorthorn Cattle For Sale

I have had placed with me one hundred high-grade Shorthorn cows, also one hundred high-grade 2-year-old heifers. The two hundred head will drop calves from December to February to registered Shorthorn bulls. These cattle are being sold because the herd has increased beyond the capacity of the ranch. They are a splendid lot. For particulars address

W. M. CARRUTHERS, 721 Hearst Bldg., San Francisco

NASH BROS.
TIPTON, INDIANA
BREEDERS OF DORSET SHEEP

BREEDER OF CHEVIOT SHEEP
GEORGE PARNELL WINGATE, INDIANA

GEORGE D. HARRAH
NEWTON, IOWA
BREEDER OF
HEREFORD AND SHORTHORN CATTLE

EUROPEAN WAR ATLAS

Free With Your Subscription to Orchard and Farm

George V.
Great Britain.

The most appalling war in the history of the civilized world, from a point of human life loss, destruction of property and the impairment of the world's commerce, is now being waged by the European powers. Millions of men have been rushed to the front; thousands have already been killed and wounded in the struggle. Modern war equipment is now being given a practical test. Battleships, cruisers, torpedoes, submarines and air crafts will figure strongly in the conquest.

Nicholas II.
Czar of Russia.

Follow the Movements of the Armies and Navies The Big Battles of the War Yet to Be Fought!

With the aid of this Atlas you can locate accurately the countries, cities and bodies of water that are being mentioned daily by your newspapers. This up-to-date Atlas contains a NEW MAP OF EUROPE, showing the changes since the Balkan War; a map of the world and enlarged maps of the different countries at war; also a list of events leading up to the present crisis, an outline of the treaties and alliances existing between the different nations, accurate figures as to the comparative strength of the different armies and navies, pictures of battleships, air crafts, etc., a fine collection of war pictures with portraits of the different rulers, flags of the nations, etc.

Raymond Poincare.
President of France.

You and Your Children Need This Atlas in Your Home Now!

Altogether it is a veritable encyclopedia of war history—just what you want to know. Nothing better in print. This Atlas will be given free for a short time with renewal and new subscriptions to ORCHARD AND FARM for one year at 50c or with a three years' subscription at $1.00.

William II.
Emperor of Germany.

YOUR CHOICE OF TWO BIG OFFERS

OFFER NO. 1

Orchard and Farm
One Year
AND WAR ATLAS
50c

USE THIS COUPON

Orchard and Farm,
Hearst Bldg.,
San Francisco, Cal.

Gentlemen: Enclosed find $------ in payment of------ --year's subscription to ORCHARD AND FARM. I accept offer No.----------

Name ----------

P. O.----------R. F. D.------State---------

Good for new or renewal subscription in the U. S. only.

New or renewal----------

BE SURE TO ORDER BY NUMBER.

OFFER NO. 2

Orchard and Farm
Three Years
AND WAR ATLAS
$1.00

Hereford History In the West

By W. M. Carruthers

Little can be said of Hereford development west of the Rocky Mountains up to fifteen years ago. The principal work for the breed in this territory has been done in the four states of California, Nevada, Oregon and Washington. In 1900 in these states there were but few registered herds. The leading breeders could be counted on the fingers of one hand: James Whittier, Galt, California; the late Governor Sparks of Reno, Nevada; Joseph Murzen, Lovelocks, Nevada; George Chandler, of Baker City, Oregon; Senator Splawn of North Yakima, Washington; also C. B. Wade, Pendleton, Oregon, whose herd was dispersed in 1903, most of the best things going to the Splawn herd.

James Whittier has practically gone out of the business, although he still maintains a small herd of Herefords more from habit than from a business standpoint. George Chandler is still to the fore with the breed and is making marked advance every year. Governor Sparks has "crossed the great divide," but before the sands of life slipped away his great herd of Herefords had been scattered to the four winds, some of them finding their way into the Cone herd at Red Bluff, California (this herd was later sold to the White Lumber Co. of San Francisco); others to the Jacks Corporation, Monterey, California, but the largest lot went to George Watt, Austin, Nevada.

Recently this herd fell into the hands of George Wingfield, the mining king of Nevada, and if reports are true new operations toward the betterment of the herd are to be commenced soon. Senator Splawn's herd was dispersed several years ago to three separate California breeders: Dean Duke of Latrobe; Will Bemmerley, Woodland, and the State University Farm at Davis.

The herd of Joe Murzon was bought by the Simon Newman Company of Newman, California. Since this herd went to its new owners, under the management of Robert Dunlap, the oldest and one of the most competent feeders and caretakers on the Pacific Coast, its progress has been rapid. Several new herd bulls of note have been imported from the East and the young things now being raised give great promise.

For many years the Hereford breed was not represented at the State Fairs on the Coast. This was one of the reasons for its slow advancement. In recent years the Agricultural Colleges on this Coast have maintained herds of Hereford cattle. At the leading fairs, Hereford steers have several times carried off the grand championship honors. At the Lewis and Clark Exposition held at Portland in 1905 the two-year-old Hereford heifer, "Bright Hope," owned by Senator Splawn of North Yakima, was made grand champion of the breed in the open-to-the-world classes, several herds from the Middle West being in competition. Senator Splawn purchased her when a calf at the dispersion sale of C. B. Wade of Pendleton, Oregon. Under the favorable climatic conditions and luxurious feeds grown in the Yakima Valley, her development as a winner was made possible. This cow is now in California, owned by the University Farm at Davis. Two of her calves have won first prizes at the California State Fair.

The lack of new blood in this territory has been a considerable drawback in keeping up the breed to compete with the Shorthorn. It is only in recent years that the registered bull has been in demand in California. The chief reason was that the tick-

infested country reached almost up to San Francisco bay. Nothing but grade bulls were used in this great grazing country, as the stockmen expected to lose half of them before the season was over.

Through Government and State aid this territory is now tick-clean. The great ranges are being subdivided. Intensified beef farming is making rapid strides among the leading stock men, compelling them to raise better beef, and because of this the registered bull is coming more in demand every day.

The prolificy and great rustling ability of the Hereford are becoming better known. This has a tendency to crowd the other breeds, which at one time roamed the plains supreme, to take notice and breed cattle that can cope with the white face.

The last few years Hereford steers have been coming off the ranges fat, a month earlier than any of the other beef breeds; this has resulted in a great demand for Hereford bulls in California, but the supply is short. One of the leading butchers in the city of Los Angeles told the writer that he knew where twenty carloads of Hereford bulls could be placed if they were only in this country. Many of the large range men would use Hereford bulls exclusively if they could be had. The comparatively few registered bulls which are raised here are being contracted by range men before they have left their mothers' side.

If a display of Hereford cattle could be made at the Panama-Pacific Exposition at San Francisco next year and a "view herd" such as is usually seen at the American Royal held annually at Kansas City, the benefits to the breed from an instructive and educational standpoint would be hard to comprehend. During the long winter evenings, at many a farm fireside in the West, for many years to come the memory of such a show would be recounted over and over again. At the Spring and Fall roundups, the pros and cons would be discussed around the campfires and create a stimulus for more and better Hereford cattle.

Few of the Hereford breeders in the Middle West realize the vastness of the domain lying between the Rocky Mountains and the Pacific Ocean. Two thousand miles in length and nearly a thousand miles in breadth, it reaches as far as from Denver to New York one way and from Denver to Chicago the other way. Towns have grown up like mushrooms to cities in this country in the last ten years and are still growing. Millions of meat-eating people live in these cities and the price of beef is almost prohibitory.

Nature has been kind to this Western land; its climate is mild; its soils usually are covered with a blanket of green grass and what beef beast can beat the Hereford as a grazing animal? There are fields of conquest to be considered in the bovine world in our western as well as our southern states. Some beef breed will dominate. It is up to the Hereford breeders to do their share. A live man in the field to preach the gospel of the Hereford, one who knows pedigree and individuality, could do a great work.

The steamship lines running to the Hawaiian Islands and the republics of South America continually bring inquiries to the port of San Francisco for Hereford literature. It is known to the world that the United States leads in the production of Hereford cattle. There is no Hereford literature on this Coast, so these numerous inquiries are handled in a very haphazard manner.

California with its great seaport city of San Francisco controls much of the registered livestock trade on the West Coast of South America. As all steamships will have to pay toll to get through the Panama Canal this condition bars Eastern and foreign shipments of livestock from even competition.

The American Hereford Breeders' Association should get in touch with all the herds of purebred Herefords on the Pacific Coast states. Insist on registration. When a new herd is started from one of the old herds a membership in the association should go with the deal. The old breeder might agree to buy or help sell the new breeder's first crop of calves provided he will register them. If some method of this kind could be worked out many new registered herds would be established. Once a new breeder is started right there is usually no trouble in his pushing ahead.

Environment, climate and feeds promise much in developing the Hereford on the Pacific Coast. Several times a test has been made regarding the weight of a calf shown at the Fall fairs under a year old, as compared with a calf of the same age raised in the Middle West. The Pacific Coast calf has invariably out-weighed its eastern brother from seventy-five to a hundred pounds.—The Hereford Journal.

ALFALFA AT DAVIS FARM

From a five months planting of alfalfa at the University Farm at Davis this year 3 1-3 tons to the acre of alfalfa have been cut in two cuttings. The land grew a crop of barley in 1913, following summer fallow. The stuble was burned and the ground leveled in October 1913. It was checked up in February and March and seeded March 11,1914 at the rate of eighteen pounds per acre. The seed was put in with a drill, with the rows of seed six inches apart, the ground being immediately rolled. Shortly after a light rain fell, but not enough to prevent the alfalfa coming through the ground.

May 8 the weeds were cut and allowed to lie on the ground. From May 22 to 27, it was irigated with five inches of water, from a well. On June 15 the first crop was cut yielding 1.16 tons of excellent hay per acre. On June 30, the second irrigation, consisting of six inches of water, was applied, and on August 10 the second crop was cut, yielding 2.2 tons of hay of excellent quality. Within five months from the time the seed was placed in the ground three and one-thirds tons of alfalfa have been obtained.

DUNHAM-McLAUGHLIN UNION

The Breeders' Gazette of Chicago gives considerable space to the partnership formed by the Dunhams of Oaklawn Farm, Wayne, Ill., and William McLaughlin of Oakland, California, this summer. Both sides to this partnership have long been importing Percheron horses, and McLaughlin this summer brought out to California from France an exceptionally fine lot of Percherons from La Perche which were turned into the partnership deal. A number of these were seen at the State Fair just held at Sacramento. The Dunhams are among the oldest and most noted of the large Percheron importers and breeders of America, and their fine equipment, experience and standing with the trade will be used to supplement the work of McLaughlin on the Coast. The latter is to have charge of the trade on the Pacific Coast, while the Dunhams will give their attention to the eastern business.

The Dairy Division of the United States Department of Agriculture has issued a bulletin on the production of clean milk which contains a good deal of information on the care of the cows, construction of stable, methods of milking, care of milk and utensils and other matters relating to methods for producing good milk.

Do not swear if the cow kicks you when you tie up her tail. Put on something to keep off the flies or keep her tail loose.

A QUALITY SALE

35 HEIFERS—50 COWS—15 BULLS

All Tuberculin Tested

Never before in the history of public sales have such an extraordinary lot of cattle been offered to the public. The offerings include a 17½-lb. 2-yr.-old daughter of a 30-lb. cow, 2 granddaughters of Teake Lyons 3d, who made 737 lbs. fat in 9½ months. A granddaughter of Ignaro De Kol, that has made 100 lbs. of a milk a day. Heifers sired by brother to Tillie Alcartra, who is now breaking the world's milk record. Granddaughters of such famous sires as Pontiac Korndyke, King of the Pontiacs, Paul Beets De Kol, Homestead Jr. De Kol, Hengerveld De Kol, Pontiac Hengerveld Parthenea, Berlys Paul De Kol, and others of equal note. A number of the cows have large official records and are bred to sires whose breeding and individuality are second to none in the United States, including a son of the world's champion milk cow, Riverside Sadie De Kol Burke.

The bulls are an especially choice lot and include a son of the former world's champion 2-year-old, Juliana De Kol. A son of a 779-lb. yearly record 4-year-old. And others from high yearly record dams. Also a number of grandsons of some of the above named famous sires.

AN HONEST SALE

The consignors wish it to be emphatically impressed that there will be no by-bidding of any kind or character at this sale. Each and every one would rather the stock be sold at ten cents on the dollar than for you to question the honesty of this sale. Remember the place and date,

WEDNESDAY, OCTOBER 28, 1914
HANFORD, CAL.

Write for catalog.

COL. BEN A. RHOADES, AUCTIONEER, Los Angeles, Cal.
JAS. W. McALLISTER JR., SALES MANAGER, Chino, Cal.

FOR SALE
HOLSTEIN-FRIESIAN BULLS

Five registered bulls and 4 registered bull calves.

These calves are from Eastern A. R. O. grand dams and have for sire King Seges, 2d, one of the best young bulls in the State of New York. —AND—

1,000 Unrecorded Pure Bred Shropshire Ewes and Rams.

These sheep are large and in fine condition. Can be seen near Firebough. Prices on application.

MILLER & LUX, INC. Merchants Exchange Bldg. San Francisco

HOWARD CATTLE COMPANY

Breeders and Importers of

SHORT-HORN CATTLE

55 New Montgomery Street **San Francisco**

HALLWOOD FARMS

Breeder and Importer of

SHORTHORN CATTLE

Address E. M. HALL, Carthage, Missouri.

Home Curing of Meats

In the September issue information regarding the handling of meat was the topic for the Household Exchange. On this account and for its own sake the following on Home Cured Meats from the Colorado Agricultural College will evidently come in very nicely

Corned Beef.

Use the cheaper cuts of meat from the lower part of the body. Cut into convenient chunks of about equal thickness. Pack the meat first in salt, using eight pounds of salt for each 100 pounds of meat. After the meat has remained eight to twelve hours in the salt pack, add a brine composed of four pounds sugar, two ounces baking soda, four ounces salt peter dissolved in four gallons of water. This should be enough to cover the meat but if not, add more water. Put a weight on the meat to keep it beneath the brine as any exposed parts will spoil.

Keep the vessel in a cool place, and leave the meat in the brine until you are ready to use it. If the brine appears ropy or thick, pour it off, wash the meat and repack in new brine. The brine on corned beef must be watched closely as the slightest tainting of the brine results in soured meat, beef spoiling much more readily than pork.

Dried Beef.

Home-cured dried beef is a delicacy that no farm home should be without. The hind quarter of a thin cow is suitable for this purpose, and in cutting up the quarter, one should start near the back and carve out the large muscles without cutting across them. This will give you irregular shaped pieces of meat which can be cut across the grain when dried.

Make a mixture of five pounds salt, three pounds sugar, two ounces salt peter for each 100 pounds of meat. Use one-third of this mixture to rub into all surfaces of the meat, then pack the meat in a barrel. After three days, take out, rub with another third of the mixture and repack, this time putting at the bottom the pieces which were on top before. Leave the liquid which appears in the barrel, repacking the meat in it. At the close of another three days, repeat the process, and leave for three more days. The meat may then be taken out, allowed to drain a day, smoked, and hung up to dry. It needs no covering when drying, except to keep off the dirt.

Hams and Bacon.

Sugar curing gives far better meat than plain salt brine. Use ten pounds of salt, three pounds of sugar, brown preferred, and three ounces of salt petre for each 100 pounds of meat, dissolving the mixture in five gallons of water. It is best to boil the brine, but it must be thoroughly cooled after the boiling before being put upon the meat. Be sure you have enough brine to cover the meat an inch or two above over all.

For immediate use bacon may be taken out of brine in three weeks, and hams in four. Where the meat is to be kept some time before using leave bacon in brine four to six weeks and hams six to ten weeks depending on their size. The meat must be kept in a cool place while in the brine, or the meat is likely to mold and sour.

After taking the meat from the brine, drain for a day or two and then smoke with a cool smoke. If you want to keep some of the pieces for summer use, wrap in paper, then in muslin and paint the muslin with whitewash to keep insects away. Or bury the paper wrapped hams in the oat bin or in salt.

Sausage.

For pork sausage use three parts of lean to one of fat. For each four pounds of the meat use about one ounce of salt, one-half ounce of black pepper, and one-quarter ounce of ground sage.

Mixed beef and pork sausage may be made from two parts pork and one part beef. It is mixed and cured in the same way as pork sausage.

Smoking Meats.

Hickory, of course, is best, but aspen or cottonwood, or corn cobs may be used. The meat should hang high above the fire and it really is best where a temporary smoking arrangement is made, to hang meat in a separate box or barrel and conduct the smoke to it through a stove pipe, or other means, from the pit where the fire is built. The fire must not be allowed to blaze, but just smolder. The meat must not be allowed to become heated while being smoked.

If it is not possible to use real smoke, a chemical product known as liquid smoke may be secured at a drug store, although it is not quite so good as real smoke.

There also were several suggestions for the selection and preparation of meats that came in too late to use in the September issue, several of which are given below.

Meat Selection.

Without regard for the butchers' names for the different cuts we can easily remember that the bone work of every animal is practically the same. The most bone is in the forequarter, therefore the general rule is this, the market value of meat increases backward from the head, but decreases downward towards the legs. This brings the choicest cuts in the back and upper part of the body. Good beef is dark red in color and grows brighter from exposure. It should have little odor and be firm and dry rather than moist and should also be well marbled with fat. The cut that is best considering the price can only be determined by the skill of the cook. Some of the cheaper cuts can be made into delicious palatable dishes by a good cook, while other cooks would make the best cut unpalatable. Of course the quality of the meat will also need to be considered.

Much used muscles have a tendency to toughness, but they are also more nutritious than unused muscles.

The large percentage of bone in the cheaper cuts is the worst drawback in their preparation.—MRS. WM. E. KING, Castle Dale, Utah.

Flank Steak.

I find a flank steak a most economical piece of beef. It costs less than round steak (about 15c a lb), weighs from 1½ to 2½ lbs., and can be prepared in half a dozen different ways.

1—As mock duck, rolled with dressing in the center, then baked.

2—Individual rolls 2x6 inches filled with dressing, browned, then stewed until tender in a brown sauce.

3—Cut into pieces, browned and stewed until tender in brown sauce.

4—As a Spanish steak with sauce of onions and tomatoes.

5—Meat pies.

6—Ground in food grinder it may be used for meat cakes or a beef loaf or a camelon of beef.—M. A. TIKIOB, Concord, Cal.

Beef or Mutton Loaf.

Take one quart of raw or cooked beef or mutton, cut up fine, two eggs, one pint of milk, cup of bread crumbs or a little flour, one teaspoonful of pulverized sage, salt to taste, a little onion. Bake half an hour and serve with tomato sauce.—MRS. FRANK MORIN, Healdsburg.

Extending Meat Flavor.

Common household methods of extending the meat flavor through a considerable quantity of material which would otherwise be lacking in distinctive taste, are: to serve the meat with dumplings, generally in the dish with it; to combine the meat with crusts, as in meat pies or meat rolls; or to serve the meat on toast or biscuits. Borders of rice, hominy or mashed potatoes are examples of the same principles applied in different ways. By serving some preparation of flour, rice, hominy or other food rich in starch with the meat, we get a dish which itself approaches nearer to the balanced ration than meat alone, and one in which the meat flavor is extended through a large amount of the material — MRS. THOMAS LEWIS, Bozeman, Mont.

Beef a la Mode.

Get a piece of upper part of round of beef, make a dressing or stuffing of a pint of fine bread crumbs, one egg, 1½ teaspoonful of pepper and a little onion. Take out bones of meat, put in stuffing, brown well on all sides in a stew pan, put a little water to keep from burning and garnish with French carrots.——MRS. FRANK MORIN, Healdsburg.

Every harvest brings us a little closer to the day when mining grain from acres increasing in selling value will not pay.

Fortunes Are Being Made

every year in Florida out of Fruits and Early Vegetables. Not a better spot in the whole state than BAY VIEW. Our big, free handsomely illustrated Book will prove it to you. Soil is deep, rich, sandy loam—very exceptional for Florida. Sample of this soil mailed free with literature. Plenty of rainfall 12 months in the year. Irrigation is unheard of. Crop failures practically unknown. Two and three crops easily raised each year on the same ground. $50 to $500 profit per acre each year. Satsuma oranges, figs, pears, peaches, plums, grapes and all kinds of berries produce abundantly. You can also raise enormous crops of corn, oats, hay, Japanese cane, clover, sweet and Irish potatoes, sugar cane, celery, tomatoes, lettuce, cabbage, watermelons, cantaloupes, egg plant, cucumbers, radishes, turnips and all kinds of early profitable vegetables. Ideal location for Dairying and Stock Raising. Ready markets and good prices. Grass for pasture the year round. Don't have to stable and dry feed six months in the year. One of the finest climates in the United States, both summer and winter. No sunstrokes in summer—no frostbites in winter. Ideal salt water boating, bathing and fishing. Lumber at wholesale prices. Good stores, churches and schools. WRITE TO-DAY FOR FREE BOOK, SAMPLE OF SOIL, MAPS, ETC.

Santa Rosa Plantation Company
Room 304, 208 N. 5th Ave. Chicago, Ill

SUGAR 2c a lb.

CALL FOR COMBINATION ORDER NO. 10.

—Our Best Seller—

20 lbs. Sugar (fine granulated)	40c
2 cans of Oysters or 2 pkgs. Prunes	25c
1 can Red or 2 cans Carnation Milk	25c
3 cans Corn Tomato Puree or 6 cans best Laundry Soap	30c
3½ lbs. Small White or 3 lbs. Lima Beans	25c
2 lbs. Tea, any flavor, or 5 lbs. fancy Coffee	$1.00
1 large bottle Flavoring Extract, or 2 lbs. best Coffee	75c
2 Seeded Raisins or 1 large Tomato Catsup	25c
1 lb. Mixed Nuts or 2 cans Maine Corn	25c
3 lbs. Mushroom Tomatoes or Rice	25c
3 pkgs. Washing Powder or 3 cans Cleanser	15c
½ lb. square best Butter or 1 No. 5 pail Pure Lard	65c
1 lb. Prunes or 1 pkg. Lily Flakecake Flour	15c
1 bottle Vanilla or Lemon	10c
Total for all unchanged	$5.00

SEND FOR OUR MONEY-SAVING CATALOGUE ON GROCERIES.

French Castile Soap, per bar	40c
Strawberry Jam, large jars, each	25c
3 cans Carnation Milk for	25c
Tomatoes, 2 cans 15c, dozen	90c
Sugar Corn, 2 cans 15c, dozen	90c
Babbitt's Best Soap, 6 for	25c
Oil Dish Cleaner, 2 for	15c
Sliced Pineapple, 2 cans	25c
Asparagus Tips, per can	10c

A Free Trial Order will make you one of our many well-satisfied customers.

FREE DELIVERY ACROSS THE BAY. MAIL ORDERS A SPECIALTY. PROMPT SHIPMENT.

FREESE & CO.

Phone West 25.
1260-66 Divisadero, Corner Ellis,
San Francisco.

A VALUABLE BOOK FREE

It tells of experiments in feeding live stock both ground and unground grain, alfalfa and kaffir corn—also shows how 25% can be saved—shows value of different foods — tells about balanced rations — describes

STOVER AND IDEAL FEED MILLS

To get it simply write—Send me your book LIVE STOCK AND GROUND FEED.

STOVER MFG. CO.
171 IDEAL AVENUE • • • FREEPORT, ILL.
SAMSON WIND MILLS—ALFALFA GRINDERS
PUMP JACKS—ENSILAGE CUTTERS

WEALTH IN INVENTIONS. Patent your ideas. Send for our Free Book, and advice How to Succeed. SIES & CO., Attys., 563 7th St., Washington, D. C.

GUARANTEED FROM THE ROOTS UP.

The FRESNO NURSERY CO. INC.

HONEST · NURSERY · STOCK

This is the season of year to think about the Nursery Stock you will need for next Winter's Planting. Submit us a list of your wants for quotations. We are headquarters for FRUIT TREES and GRAPE VINES. "Guaranteed from the Roots Up" and can please you in quality and price. Beautiful, Large Catalogue, Illustrated and Full of Information, mailed upon request Free. Address

THE FRESNO NURSERY CO., INC.,
Box 615, Fresno, Calif.

KIRKMAN'S RELIABLE TREES

Trees that grow and bear true to name. Now booking orders for next season. Write us now about what you will want.

Kirkman Nurseries
2027 Tulare St., Fresno, Cal.

FARMERS' CLASSIFIED MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Baby Chicks—S. C. White Leghorns from tested hens of proven merit, mated to our pure blooded Wyckoff cockerels; bred for heavy laying for more than 30 years and universally recognized as the best paying strain of fowls ever produced. If you would have the highest quality at moderate prices, place your order with **G. & C. Poultry Farm, Rural No. 1, Sonoma, Cal.**

Sheppard's Famous Anconas — The world's best. Single or rose comb. First at world's greatest shows, including London, England; Madison Square and Cleveland. Greatest egg record, average 256 for entire flock. **Cecil Sheppard, Berea, Ohio, president International Ancona Club.**

Hicks' Jubilee Hatchery is now booking orders for Sept., Oct. and months following; Circular for the asking; NO PULLET EGGS USED IN OUR HATCHERY; A1 CHICKS are the ONLY ones we ship. **Hicks' Jubilee Hatchery, Route 2, Box 22, Petaluma, Cal.**

S. C. Rhode Island Red Chicks and Hatching Eggs—Hundreds or thousands from heavy laying strain. Few cockerels $5 each. **Pebbleside Poultry Farm and Hatchery, Sunnyvale, Cal.**

Order Mammoth Bronze Turkey eggs from largest turkey ranch in Stanislaus county, $3 per setting. Address **Crow's Landing Turkey Ranch, Box 227, Crow's Landing.**

Petaluma Hatchery — Now booking orders for fall. August, September and October chicks are highly profitable. Send for circular. **L. W. Clark, Petaluma, Cal.**

Incubator Chicks—White Rocks and White Leghorns; high-class stock. Send for booklet of prices. **Mahajo Farm, box 597, Sacramento, Cal.**

The Buff Orpingtons You Want—Big bony cockerels and fine pullets; prices reasonable. **Ernest L. Wilder, Los Gatos, Cal.**

Trapnested White Leghorns—Bargains in cockerels from heavy layers; only $1. **Arthur R. Schroeder, box 22, San Gregorio, Cal.**

Albert M. Hart, Clements, Cal. (successor to Ed. Hart), Mammoth bronze turkeys and eggs for sale. (Circulars.)

Incubators, Brooders, Supplies, Smith's Universal Chick Feed. Hogan's "Call of Hen," $2, prepaid. **F. F. Smith & Co., 1006 J St., Sacramento. Circulars.**

Croley's Poultry Condition Powder is a wonderful help to your hens through the molt. Your dealer carries it.

For sale—2 Black Minorca cockerels, Northrup strain. **247 Carl st., San Francisco.**

Young Barred Plymouth Cockrels for Sale. W. T. Neal, Silverton, Ore.

DUCKS

Ducks, Indian Runners, thoroughbreds—4 laying ducks, handsome drake, $7; hatching eggs, same, 65c dozen; Mammoth Pekin Ducks, drakes. **Mrs. Nutman, 295 Page st., San Jose.**

March and June hatched Mammoth Pekin Ducks for breeding; $12 and $15 per dozen. **Mrs. Morris, 630 Palmetto ave., San Francisco.**

HOUSEHOLD SUPPLIES.

Use Kurtain Kream for tinting curtains, laces and thin material. Used like blueing; 25c package. **Kurtain Kream Co., 1017 Alaska Bldg., Seattle, Wash.**

"We Pay the Freight"—To reduce the high cost of living, send for our Wholesale to Consumer catalogue. **Smith's Cash Store, 106 Clay St., San**

BUSINESS CHANCES

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

REAL ESTATE

$12,500—WILL TRADE FOR RANCH. Fine suburban home in beautiful San Mateo, only 30 minutes from San Francisco; good train service, 38 trains daily and interurban cars every 15 minutes; modern house with every convenience, 14 rooms, artistically decorated paneled walls, spacious grounds in fine condition; garage, etc.; perfect climate, ideal home. **A. H. Sebastian, 270 Monadnock bldg., San Francisco.**

Victoria, Australia, Wants Settlers—Special inducements; Government land, railways; free schools; cheap irrigation; 31 years to pay for farms adapted to alfalfa, corn, grains, fruit, etc.; climate like California; ample markets; reduced passages; special excursion being arranged. Free particulars from **F. T. A. Fricke, Government Representative from Victoria, 687 Market St., San Francisco, Cal., Box T.**

Alameda County—375-acre dairy ranch; south of Hayward; $250 per acre; all level, deep, rich soil; lots of water; close to Oakland-San Jose boulevard; fine for alfalfa; terms. This is the last large body of land in this district that can be bought for anywhere near this price. **A. C. Parsons, Owner, 1201 Merchants' Natl. Bank Bldg., S. F.**

FARMS AND RANCHES WANTED. Do you want to sell or exchange your place? I have buyers who are hunting for improved and unimproved farms and ranches. Your property will receive prompt and efficient attention. Write me to-day. **A. H. Sebastian, 270 Monadnock bldg., San Francisco, Cal.**

The Ansel Litchfield ranch near Lathrop, San Joaquin county; 337 acres are offered for sale by his administrator. Price $33,700. No better producing land in the San Joaquin. Abundant water. Adapted for fruit or alfalfa. An exceptional property and bargain. **C. B. Younger, Santa Cruz, Cal.**

5 Cents an Acre Cash—Texas school land for sale by the State. You can buy good land for $2 per acre; pay 5 cents per acre cash and no more for 40 years, but 3 per cent interest. Send 6 cents postage for further information. **Publishing Co., Dept. SS, San Antonio, Texas.**

Overlooked for years—What? **Good State Land,** all counties. **Indian and Government Land,** many counties. Free booklet telling **"Hows"** and **"Whys."** **Joseph Clark, 1511 K St., Sacramento.**

A Bargain in my 6,000-acre ranch in Nueces Canyon, well improved, well watered, 10 miles of new railroad; exchange part drygoods. **R. W. Lane, Laguna, Texas.**

For sale—10 acres, fully equipped, chicken ranch, 3 miles from Petaluma; fine location; terms. **R. R. 4, Box 221, Petaluma, Cal.**

All sizes of farms in Carroll county, Missouri; 70 miles east of Kansas City; corn, clover and blue grass land. For list write **T. A. Shields, Tina, Mo.**

Ranches, homes, acres, lots, exchanges. Send for free list. **Wilson Bros., Santa Cruz.**

For sale—20 acres Stevinson colony, Merced county. **J. Kompt, Sausalito R. D.**

Six-room house (clear), to exchange for chicken ranch. **Owner, 574 Jersey st., S. F.**

For sale—75 acre alfalfa ranch near Woodland. **Box 48, R. F. D. No. 3, Woodland, Cal.**

REAL ESTATE WANTED

Farms Wanted. We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property Free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted—Good farm. Well located. Give description and price; from owner only. **Staal, Box 754, Chicago.**

AGENTS WANTED

Wanted—Responsible party to take charge of business in each county. New Automatic Combination Tool, combined wire fence stretcher, post puller, lifting jack, etc. Lifts or pulls 3 tons, weighs 24 pounds. Sells to farmers, shops, teamsters, etc. Descriptive catalogue and terms upon request. **Harrah Manufacturing Co., Box M, Bloomfield, Ind.**

Spare time—no canvassing—Local information, news, names, etc., wanted. Exceptional proposition for stamp. **"Nisco"—HFG—Cincinnati, Ohio.**

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

MISCELLANEOUS—FOR SALE

Roofing—

Weather Proof.
Ready to Lay.

Prepare for the Rainy Season.
Samples Mailed on Request.
1-ply, 50c roll, 108 square feet.
2-ply, 75c roll, 108 square feet.
3-ply, $1 roll, 108 square feet.
Nails and cement, 25c per sq. ft. extra.

The very best heavy rubber roofing paper; feels like rubber, wears like iron; simple and easy to lay. Perfect satisfaction guaranteed at prices never heard of before. Lower than cost of manufacture. Selling direct to you makes these prices possible.

Do you need any plumbing supplies?

We handle a complete line, and will be pleased to quote you prices on receipt of your inquiry.

We carry a complete line of GENERAL MERCHANDISE besides the above line.

AAA—Prices lower than ever; special prices on all lines. We carry a complete stock in the following lines:

Plumbing Supplies.
Roofing Materials.
Barb Wire Nails.
Pipe, Brass Goods and all kinds of **General Merchandise.**

We are offering extraordinary prices on all of our goods this week and would be pleased to quote you prices. Mail inquiries promptly answered.

SIMON BROS.,
1049-53 Howard St.
San Francisco.

AAAAAAAAAAAAA—

Attention, Farmers!
Building Material.

Consignment of new plumbing material just arrived, A-No. 1, perfect; lowest prices. Some very slightly damaged, one-half price. See our display, any kind, all prices, comprising sinks, tubs, porcelain and vitreous; dark and light oak toilets, slop hoppers, urinal, comb. sink and trays, basins, cement trays, traps, all sized fittings, faucets, boilers, hot water heaters, pipe, etc.

Lumber.

New and second-hand; over 4,000,000 feet; dimension stock; 350,000 feet 4-inch plank; 4x4 to 12x12; cheap. Doors, windows, 25c up; ready roofing, roofing felt, chicken netting, building paper, nails, mantels, glass, booth sides, anything in material; one-half block. See us before buying. Quality, quantity, price. Car lots at special rates. We load and ship; no worry to you. Every purchase backed by our absolute guarantee. Call new location, get prices after inspecting stock. New address. **1501-1527 Market St., corner Eleventh. SYMON BROS., Reliable Wreckers.**

Second-hand and New Water Pipe—All Sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Self Instructive Books — Agricultural, mechanical, scientific, business, art, languages; any subject; lists 6c; mention your subject. **C. Higene Co., 2441F Post St., San Francisco.**

Buy your Belts from California Belting Company, 1459 Mission st., San Francisco.

One Hundred 5-cent Owl Cigars prepaid for $3.85. **Frank J. Case, Richmond, Cal.**

EDUCATIONAL

We teach you how to Tan, Dye, Blend all kinds of Furs and make them into garments. How to mount your own spicemens. Send for our free booklet. **The Oregon School of Taxidermy, Lakeview, Ore., Box 525A.**

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

PIGEONS

35 pairs Carneaux Pigeons, ½ price, $2 per pair; young, banded, working. **Address 1238 Thirteenth ave., San Francisco, Cal.**

FROGS

Frogs—Investigate breeding big Eastern bullfrogs; unusual possibilities west of mountains. Tremendous demand. **Aqualfeco, Seymour, Conn.**

LIVESTOCK

Prize-Winning stock of Poland-Chinas and Mulefoot Swine—Fine boars of service age for sale. Mulefoot pigs, both sexes. **Rivergarden Stock Farm, Grafton, Cal.**

3 Weaning Boars for Sale; registered "Tamworth," the bacon and block hog; $10 each. **L. J. Archer Jr., R. F. D., Antioch, Cal.**

Mules for Sale. Phone **Oakwood Park Stock Farm, Danville 121,** or **Mount Diablo Park Co., San Francisco, Kearny 3670.**

Pure bred Chester White Weanlings. $15; sire Patternmaker 26677, 2nd 1913 international champion. **Dallas Bache, R. D. 2, Hollister, Cal.**

Pacific Guernsey Herd offers a few very choice young bulls. **C. S. Rasmussen, Loleta, Cal.**

Registered Berkshires $10 at weaning time. **W. D. Good, Mt. Vernon, Wash.**

TREES

For Sale—Grafted Washington navel orange and lemon trees; clean, vigorous, well rooted and healthy, from ½-inch to ⅝-inch diameter; will make special price for large order. Write or call **L. Shoda, representative of the largest nursery association in California, 230 M St., Sacramento, Cal.**

Mission Olive Trees—For March and April delivery; will then be two years old; to be sure of getting Missions, I only plant cuttings from trees I raised 30 years ago; be sure of species before planting. Missions are considered the best. **W. A. Hayne, Marysville, Yuba Co., Cal.**

Bartlett Pear Trees—One year, 4 to 6 ft., $14 for 100; $125 for 1,000. Apple trees, 4 to 6 feet, 7 cents each. Guaranteed to stand inspection. Write for catalogue. **Southern Oregon Nursery, Yoncalla, Oregon.**

SEEDS, PLANTS, ETC.

"Burbank Spineless Cactus"—From the home of the originator. We are offering for fall and spring deliveries the improved forage and fruiting varieties of Burbank's Cactus, which we guarantee true to name. Send for catalogue and price list with special offers for orders placed this fall. **Santa Rosa Spineless Cactus Farms, or Jesse I. Jewell, Manager, Santa Rosa, Sonoma Co., Cal.**

Get prices, plant now. **Luther Burbank & Mediterranean Spineless Cactus Plantation, San Dimas, Cal.**

DOGS

Pedigreed Scotch Collie Puppies, 8 weeks old; males $7.50, females $5. **C. Keaton, R. 5, San Jose.**

English setter pups, highest pedigree; reasonable; Judge Post at stud, $15. **M. P. Cook, Belvedere, Cal.**

Thoroughbred Collie Pups for sale. Address **Miss Shoemaker, Los Gatos, Cal.**

RABBITS

Belgian, New Zealand and Black Flemish Rabbits—Scored and sold on merit; catalogue free. **Caldwell Bros., Los Angeles, Cal., Box 613.**

New Zealand Reds, thoroughbred, from prize stock; Does bred, and young Bucks. **Mrs. C. A. Richey, R. D., Box 557, Los Angeles, Cal.**

Sinnott's Rabbitry, successor to Hare and Feather Yards—Breeder of high-grade pedigreed Belgian hares. **2219 Trinity St., Fresno, Cal.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

MACHINERY AND SUPPLIES

Second-Hand gasoline engines, from one h. p. to fifty h. p., and pump, any sizes; guaranteed. **W. Adams, P. O. Box 423, Sacramento, Cal.**

ADVERTISING

In This Department of Orchard and Farm pays in results because the ads are watched by buyers all over California. If you have real bargains to offer, the 3 cents a word rate will find you many customers.

Prevention of Poultry Diseases

By Prof. J. E. Dougherty

A good many years' experience has indicated to the writer (1) that the control and eradication of the poultry diseases that are causing our breeders a considerable annual loss must be brought about by means of prevention rather than cure, (2) that a great many of the poultry raiser's troubles are due to errors in management and can be avoided with proper knowledge and experience. A man must always know his business thoroughly before he can make a success of it. KNOWLEDGE and EXPERIENCE are just as fundamental to success in poultry raising as they are in the grocery business, manufacturing, or any other line of endeavor.

We have begun to keenly realize that the fight against disease and weakness, whether in fowls, domestic animals or man, must be carried on along the lines of prevention and not by means of curatives after each trouble has appeared. This requires an intimate knowledge of the causes of such troubles—knowledge is a first essential.

Would it have been possible for the American military forces to have accomplished their wonderful sanitary rejuvenation of disease ridden Cuba and Porto Rico along any other lines than those of prevention? They achieved success by wiping out the primary causes of disease in general, viz.: filth, crowded conditions, dark, ill ventilated houses and lack of quick action in isolating all those taken down with contagious disease, and thoroughly fumigating the source of the outbreak. Nor could they have secured the splendid sanitary results in the canal zone which have been such vitally important factors in enabling us to build the Panama canal in so short a time and with so small a loss from disease among the army of workers without the waging of a thorough campaign against the cause of those dread troubles and thus preventing rather than attempting to cure after such disease had attacked them. To accomplish this required an intimate knowledge of the causes of such disease and how to combat them successfully.

As a result of experimental research and the knowledge of disease and disease prevention in the case of the human race, yellow fever has been practically eliminated wherever sanitation is properly carried out. The death rate from hydrophobia has been reduced from 12 to 14 per cent of the persons bitten to less than 1 per cent, typhoid fever has been almost completely stamped out in our armies, the death rate from diphtheria in 19 European and American cities has been reduced from 79.9 deaths per 100,000 population in 1894 to 19 per 100,000 population in 1904; in fact, during the last fifty years tremendous strides have been made in the control and elimination of disease as a result of knowledge acquired through research and its application to disease prevention.

Constitutional vigor, rational, common sense methods of feeding and caring for the fowls, cleanliness, unremitting watchfulness and constant culling of weak stock are the means which must be employed if a strong, vigorous, profitable flock is to be maintained.

Heavy production places a tremendous drain on the commercial fowl's system because the digestive as well as the reproductive organs are forced to work to their highest capacity. If we are to secure heavy yields of eggs, quick growth of flesh, and strong, vigorous chicks, our fowls' bodies must be in perfect condition, every organ working to its full capacity and in close co-ordination with every other part of the intricate body mechanism. The management of a factory does everything possible to increase the efficiency of the machinery that is turning raw material into finished product. Careful records are kept and efficiency curves drawn for each individual machine, and no stone is left unturned to increase this efficiency by either improving or replacing those machines that are not giving satisfactory results. From the commercial viewpoint hens are machines for manufacturing meat and eggs from the raw material—feed. If the highest efficiency is to be secured from each of these machines every working part must be kept in perfect working condition and free from any foreign material that might clog the wheels. Dr. W. H. Jordan says: "I suspect the hen is the most efficient transformer of raw material into finished produce that there is on the farm. Her physiological activity is something remarkable. So in that particular the hen stands in a class by itself." How clearly Dr. Jordan emphasizes in the above words the immense strain which high production places upon the digestive and reproductive processes of the fowl's body and the vital necessity of perfect and united action between all parts of the body organisms. In other words, perfect health.

Constant and rigid selection for vitality from "cradle to grave" must be carried on. The vigor and stamina of the parent stock exerts a tremendous influence on the hatchability of the eggs set and the hardiness and livability of the chicks hatched. Vitality in the mature stock is the first point of attack in solving the problems of chick mortality. A bird that has been sick, a male that is not robust, a fowl that is not of good type with brilliant, lustrous plumage and full round eye, a hen that is not alert and active, should never go into a breeding pen. Only the best should be used to produce the eggs that are to hatch the parents of future generations. All the year round vigorous selection, and an intimate knowledge of the fowls is required to successfully maintain the superior vigor of the flock. It takes courage to sacrifice birds that are not quite up to the mark, but it costs money in the end not to do so.

Overfeeding, the feeding of insufficient amounts of greenstuff, the too free and frequent use of condimental feeds and feeding of too much high protein mill feeds, meatscraps, etc., crowded, unsanitary quarters, insufficient exercise and uncomfortable surroundings are rather common errors of management and give rise to a large number of the troubles affecting our birds.

Irrational feeding is a practice which cannot be too strongly condemned. Rather a popular notion is that with a sufficiently forcing and stimulating ration fowls can be made to produce heavily irrespective of their breeding or natural capacity. While it is true that a properly balanced ration must be fed which will supply the proper nutrients with which to make eggs, a fowl must be bred for egg production and thereby possess an inate tendency to naturally produce heavily if she is going to maintain her vigor and not go to pieces. Breeding is as vitally important as feeding and should receive far more attention if one is to be successful in commercial poultry raising.

All the principles of nutrition as they apply to you yourself will apply to fowls. Intelligent feeding of fowls consists in applying common sense to the hen's needs just as you do to your own. Feed less grain in the morning than at night, where the fowls are fed in a scratching litter in order to keep them scratching. If fowls are fed a big, full meal in the morning, instead of bustling around, getting exercise and plenty of fresh air, they will sit around in warm spots to "sleep it off." A person who eats a big hearty meal in the morning is not as fit for a hard day's work as if a more moderate meal were eaten. Feed in such a way that the appetite is just on edge through the day and then give a good full meal of grain at night before the fowls go to rest.

In feeding wet mashes, provide plenty of troughs so that every fowl gets a fair chance, and give only that which will be cleaned up quickly. Now that the dry mash system of feeding has proven so successful the wet mash need only be used as a treat, such as a warm noon mash in winter to birds that are laying heavily.

Suppose a bird goes off feed It indicates that the digestive organs are out of order and need cleaning out. A person under such conditions takes a physic to rid the digestive tract of the

(Continued on Page Thirty-one.)

it has the "Kick"

RED CROWN

the Gasoline of Quality

Not a mixture but a straight product of refining

Standard Oil Company
(CALIFORNIA)

You can go after bear, moose, deer, with the confidence that brings success if you shoot the

Marlin
Big Game Repeating Rifle

Marlins are always dependable and famous for their extreme accuracy.

MADE in all popular big game calibres—guns of splendid accuracy, range and power.

They have Special Smokeless Steel barrels, and the quick, reliable *Marlin* lever action. All have the protecting solid-top, side-ejecting safety construction; can't freeze up or clog with snow, rain, twigs, dirt or sand; empty shells never thrown in the shooter's face.

Send 3 stamps postage for big catalog to help you select right gun.

For smaller game, lever action rifles in .22 to .44 calibres; "pump action" rifles in .22, .25 rim-fire, .25-20, .32-20; repeating shotguns, 12, 16, 20 gauges.

The Marlin Firearms Co.
116 Willow Street, New Haven, Conn.

Answers For Poultry Problems

—By Prof. J. E. Dougherty—

CONTAGIOUS CATARRH - BRONCHITIS—Some of my chickens are about two and a half months old and they stand around as if they were asleep, their heads swell around the eyes and then in a few days they die. Can you tell me what is wrong? I can't find any mites or lice. I have some that are from three to four months old and they will get to gaping and make a squawking noise, stand around a day or two and die. I cut some of them open and find bits of gravel in the passage between the crop and the gizzard. What can I do for them? I use plenty of lime and charcoal around the chicken house, feed mostly wheat and table scraps and they get some green stuff. O. M. B., McGill, Nev.

The fowls suffering from swelled head have contagious catarrh, the treatment for which was given in our last issue. This dread disease often follows a cold or simple catarrh. Fowls catch cold, it develops into simple catarrh, the germs of contagious catarrh get a foothold and then we have a contagious disease to fight. Simple colds and catarrh are generally caused by exposure to chilling draughts, dampness, weak vitality, etc. Good houses, intelligent management and vigorous birds are the best preventives of disease.

The gaping you mention may be due to bronchitis or to irritation from the pieces of grit. Bronchitis frequently follows a hard cold due to an extension of the inflammation to the throat. Put the sick birds in a dry, well ventilated, but not drafty, room and give ten drops of spirits of turpentine in a teaspoonful of castor oil to each fowl. Repeat every six hours, giving two to three doses, and then wait a few days to see if the bird improves before giving any more. Be careful not to exhaust the strength of a fowl by overdosing. To relieve the gasping temporarily, drop three to six drops of syrup of epicac on the tongue occasionally.

PERICARDITIS—I am having considerable trouble with my hens. I keep their quarters clean and they get plenty of fresh water and feed and still don't seem to thrive. They are not crowded and have large range. My Leghorn pullets seem to be well and next day they are gaping for breath and won't eat, will only drink water and in a few hours are dead. I have no Leghorn hens, but my Plymouth rock hens seem to have a grinding noise in the throat and their head swells on one side and yellow matter runs out of the eye. The other side of the head is not affected. They cough and rub the head on the wing. I keep the sick birds from the well, but almost every day there is one or more sick. I have been told to rub coal oil on the head, but it don't seem to do any good. Somehow this sickness don't seem to stop their eating. They eat well and drink a lot of water. Mrs. M. S., Hayward, Cal.

The description of the symptoms of the trouble affecting your Leghorn pullets is too indefinite and brief to help us in diagnosing the disease. Gaping is a symptom of a number of diseases. The suddenness of death after the gaping begins would seem to point to pericarditis, or dropsy of the heart sac, resulting from exposure to cold, dampness, confinement in unsanitary houses, etc. For this disease, remedy conditions and give two to four grains bicarbonate of soda per bird per day in drinking water.

The Plymouth Rock hens are affected with a severe case of contagious catarrh or roup, the treatment for which was given in full in our last issue.

SICK DUCKS—Will you please tell what causes Indian Runner ducks to get lame or weak on their feet so they can scarcely walk or stand, and then sicken and die?—B. R. C., Butte City, Cal.

The trouble you mention is usually caused by exposure to dampness, especially at night, or to cold, or the feeding of too rich and heavy feeds. Feed more bran and fresh green stuff. Begin treatment with a dose of epsom salts at rate of one-half teaspoonful per fowl. The next day add 30 to 40 grains of baking soda to each quart of drinking water and bathe the affected parts daily with tincture of arnica. The more seriously affected fowls had better be killed and the main efforts turned to removing the cause.

LIVER TROUBLES—I would like to ask if you can tell me what is the matter with my Rhode Island chicks. They are now three and four months old. Have had them in close quarters while small. When seven weeks old I gave more room. They were growing plump and looked healthy for some weeks, when I noticed some were looking thin and sickly in the face. I turned them all out. I fed them sour milk mash, bran, middlings and ground alfalfa. Kept on until I noticed about half of my young flock turning pale and poor. I began to make mash from ground oats, barley, cracked corn, middlings, ground alfalfa, bran and sour milk. The mash was fairly dry, fed twice a day, at 10 a. m. and 3 p. m., wheat with it. I made medicine water out of permanganate of potash, but my chicks were not improving. They would eat, then huddle in a corner or the sun, but gradually getting weaker until they would be too poor to eat, and die. I cut a few open and noticed cheese-like substances in their liver in spots. I fed them charcoal most all the time. Is sour milk in a mash too strong for the stomachs of growing chicks? Is ground barley very good for chicks? Do they use permanganate of potash in water for chicks? What should I feed and give my sickly chicks, and will they then come out all right?

(2) Would you think chicks would get sick from scratching in barnyard manure or from the bugs that are usually found under boards or under wood, or from hot weather? For several days they also had watermelon rind. I greased their heads with lard and kerosene, as their heads seemed to be full of dandruff, but on examining with magnifying glass it was little white eggs. It killed what few lice they had, but the eggs it did not affect. —J. F. H., Proberta.

The liver spots would indicate either aspergillosis or tuberculosis. Make the quarters clean, dry and well ventilated and avoid like a plague the use of moldy litter or grains. No medical treatment is effective. Isolate all sick birds, give the whole flock epsom salts at rate of one-half teaspoonful per bird dissolved in water used to mix mash. Keep potassium permanganate in drinking water. Feed an abundance of green feed and give plenty of exercise. Burn all litter and droppings and kill and burn all very sick birds and all that die. Both sour milk and ground barley are good for birds of that age.

(2) A manure pile is not an ideal place for young chicks to scratch in. They are apt to contract fungus diseases, etc., and become infected with internal parasites. Your treatment for head lice is excellent; continue the applications of lard until all trace of the lice and their eggs is removed. Grease under wings as well as on head.

PREVENTION OF POULTRY DISEASES

(Continued from Page Thirty.)

foreign material causing the trouble. The same thing should be done for the hen. Give each hen a half teaspoonful or epsom salts dissolved in water, and poured down the throat or use the salts solution to mix a wet mash for the whole flock—depending on how many are affected. The use of a physic followed by a very meagre diet for a few days will cure practically all digestive troubles. If necessary repeat the physic in three or four days. As a rule fowls on a strong producing diet should be given salts every five weeks.

The successful poultryman must plan each year to raise a few more chickens than he has hens. In this manner he will be able to cull freely. Keep only the best and carry over at least half as many pullets as hens.

Boy Today
Man Tomorrow

The health of the growing boy depends upon the food you give him. See that he drinks Ghirardelli's Ground Chocolate. He'll like it and it will do him lots of good. It is a real health food and drink and costs no more than those beverages that are universally considered to be harmful. Begin serving Ghirardelli's tomorrow. It will please every member of the family.

In hermetically sealed cans.

Ghirardelli's Ground Chocolate is the only original ground chocolate. It has been used in Western homes for over a third of a century and its popularity is growing day by day

D. GHIRARDELLI CO.
Since 1852 San Francisco

Despite the European war there is no raise in prices.

GHIRARDELLI'S GROUND CHOCOLATE

Dates of Prominent Agricultural Fairs and Shows for Fall and Winter 1914

Oct. 5th-Oct. 10th—Utah State Fair, Salt Lake City, Utah.

Oct. 5th-Oct. 10th—Kings County Fair, Hanford, Cal.

Oct. 14th-Oct. 17th—California Dairy Show, Modesto, Cal.

Oct. 22d-Oct. 31st—National Dairy Show, Chicago, Ill.

Nov. 9th-Nov. 14th—Arizona State Fair, Phoenix, Ariz.

Nov. 28th-Dec. 5th—International Live Stock Exp., Chicago, Ill.

Dec. 7th-Dec. 12th—Pacific International Live Stock Exp., North Portland, Ore.

For further particulars address the secretary of any of the above meetings at the address given.

Rabbits and Hares of Different Breeds

Contributed by Mrs. C. A. Richey

There are a number of different breeds of rabbits and hares. All can be used for food. Here are the names of some of the rabbits: Angoras, Black and Tan, Blue and Tan, Blue and Grey Dutch, English, Polish and Himalayan. Hares are: Flemish Giant, Silver Gray, Steel Gray and Black Belgians and New Zealand Reds.

They are all very handsome when well bred and cared for. Good breeding gives them the right color and shape; careful feeding makes the fur thick with a beautiful gloss.

Rabbits that are not well treated have a rough shaggy coat and of course are not pretty to look at. If a doe is not fed right when she is nursing, she is a sad sight, for, as a rule, they are very faithful mothers.

Begian hares have been the most popular in America. They were introduced over 20 years ago and their popularity was astounding, the finest animals commanding enormous prices, and extratordinary claims were made as to the excellence of the meat. As was natural, when the reaction came and it was found that the Belgian was not much superior to other kinds, the animal was unjustly condemned and the business of breeding rabbits has been for some years neglected, but owing to the high price of meat and poultry the industry is being revived to a most remarkable extent.

Since the Belgian craze the New Zealand Reds have been introduced. They are a handsome hare when bred true, but they are being crossed with the Belgians and Flemish Giants and that spoils their coat. They should be a pretty, light, reddish brown down to the ends of the toes, pure white underneath, have shell pink ears and large bright eyes. They weigh a little heavier than the Belgian and the young develop for the market in about the same length of time. Fully developed, they weigh from 8 to 10 pounds. Crossed with a Flemish Giant they go to 12 to 13 pounds and no doubt for the market it is profitable to cross them.

Nothing is to be gained by crossing them with the Belgian and it only makes a mongrel looking hare. How much more interesting it is to see thoroughbred stock and to take a pride in perfecting the breed, the same as in poultry and other animals. If anyone had any doubt about thoroughbred and mongrels, they should go to the poultry show and see the beautiful thoroughbreds. The Los Angeles show had quite a number of hares and rabbits on exhibition and no doubt there will be a great many more next year, judging from the interest that was manifested in those that were displayed.

Hares and rabbits are very gentle as a rule and will raise a large family if fed well and regularly. I have a doe which raised 13 young, all large, fat and healthy, but it is not considered a good plan to let them have so many, especially if you want large stock, and there is a difference in rabbits as in other animals; some raise more than others at less expense to their vitality, as some eat more and are more robust. The raiser must judge for himself how many a doe can raise to his own profit. If one has an extra fine bred doe and wants to keep all her young he can breed at the same time an inferior doe and give her the young he takes from the fine doe, destroying the others, and she will raise them.

To get the best results the doe should be taken to the hutch of the buck and left only a short time. If the buck is left in the hutch of the doe, she will often fight him. After the doe is bred she must be put in the quarters she is to occupy, as they do not like to be bothered or have their quarters changed.

The period of gestation is about 30 days. In two or three weeks you will notice her scratching and carrying pieces of straw to make her nest. Then she must be given a box 18 to 20 inches long and 8 to 10 wide, draught proof.

The best way is to turn the box upside down, take off half the bottom, leave it loose in front and fasten to the solid half with little hinges; for this pieces of leather are good. Then it can be easily raised to see if the young are all right. On the outside of the box must be an opening large enough for the doe to pass through, and about three inches from the floor to keep the babies in, as they may get out before their eyes are open and cannot find their way back and so perish with the cold.

It is two weeks before their eyes are open and they sleep and grow. The mother pulls the fur off her breast and makes a blanket to cover them. When it is warm she lifts it off, replacing it at night.

One must be very careful about disturbing the young. On no account let any strangers look at them. If you do, usually the doe will kill them. It is a very strange thing, but a positive fact, as one finds to his sorrow. When one begins raising rabbits he wants to look at them and show friends how cunning they are, and it makes him feel pretty badly to go out a short time after and find them trampled to death. Of course, some rabbits will let you look at their young, but it is best to make sure before trying.

When you want to examine the young, as you must do once in a while, as they die sometimes, and you want to remove the small puny looking ones and leave the doe six or eight to raise, give the doe some green stuff and talk to her, quietly slipping your hand into the nest and she will not mind. Rabbits are nervous and easily frightened.

In about two weeks the little ones come out and learn to eat and in about four weeks the mother weans them. After she has weaned them she can be bred again if she is in good condition. If not, it is best to give her a little rest. Scientific articles on hares and rabbits say they should have four litters per year. I have raised six with good results. I know people who breed them more often, but that is cruel and soon plays out the stock.

Remove the young at five or six weeks old and put them with others the same size. If put with larger the older ones chase or bite the smaller. At 8 to 12 weeks old they are ready for the market.

POULTRY SHOW DATES.

Following are the dates of a number of the leading poultry shows of California and neighboring States scheduled for the coming season.

San Jose, Cal.—October 7-10, 1914. W. S. Russell, judge. Santa Clara Valley Poultry Association, Charles R. Harked, secretary.

Riverside, Cal.—Riverside County Fair Poultry Show, October 13-17, 1914. E. I. Hammond, secretary.

Stockton, Cal.—October 28-31, 1914. W. H. Maclay, secretary.

Sacramento, Cal.—November 2-7, 1914. C. A. Wilkins, secretary, Sacramento, Cal.

Santa Cruz, Cal.—November 11 to 14, inclusive; E. J. Harran, secretary, Santa Cruz, Cal.

Redwood, Cal.—November 12-15, 1914—San Mateo County Poultry Association, Fred West, secretary, box 701, Burlingame, Cal.

Willows, Cal.—November 18-21, 1914. Otto F. Suchard, secretary.

Oakland, Cal.—November 24-29, 1914. Charles G. Hinds, secretary, 535 Forty-second street.

Modesto—December 2-5, 1914. A. D. Roberts, secretary.

Pasadena, Cal.—December 1-5, 1914. M. D. Cartwright, secretary, Pasadena, Cal.

San Francisco—December 8 to 13, inclusive. W. H. Ingram, secretary, Fruitvale, Cal.

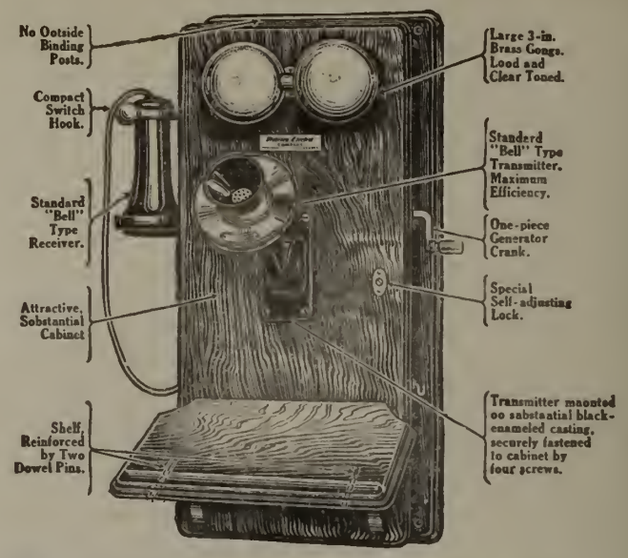
Coalinga, Cal.—December 10-12, 1914. Second annual show. Charles Miller, secretary.

Portersville, Cal.—December 15-17, 1914. E. D. Faweett, secretary; N. E. Luce, judge.

Phoenix, Ariz.—Arizona State Show, December 23-26, 1914.

Idaho—The State Poultry and Pet Stock Association will hold its next show during the week of January 4 to 9, 1915. W. M. Coates of Vancouver, B. C., will place the awards. L. L. Long, secretary.

Los Angeles, Cal.—January 6-12, 1915. Henry H. Mumford, secretary, Prospect avenue, South Pasadena, Cal.



The Leading Rural Telephone

The above diagram shows why your next telephone should be a Western Electric. No other rural telephone has such sturdy construction—such positive action—such clear, loud transmission. No wonder it is best!—it is made in the same shops where all "Bell" telephones are made. It is the product of highest engineering skill and expert workmanship. You can absolutely depend on a

Western-Electric
Rural Telephone

We shall be glad to send on request any or all of the following booklets: "The Leading Magneto Telephone," "How to Build Rural Telephone Lines," "How to Organize a Rural Telephone Company." Write to the nearest house below and mention name of this paper.

WESTERN ELECTRIC COMPANY

Manufacturers of the 8,000,000 "Bell" Telephones

New York, Buffalo, Philadelphia, Boston, New Orleans, Atlanta, Richmond, Savannah, Cincinnati, Chicago, Milwaukee, Pittsburgh, Cleveland, St. Louis, Indianapolis, Minneapolis, St. Paul, Kansas City, Oklahoma City, Dallas, Houston, Denver, Omaha, Salt Lake City, Los Angeles, San Francisco, Oakland, Seattle, Portland, Detroit

EQUIPMENT FOR EVERY ELECTRICAL NEED

MANURE

CARLOAD LOTS
HORSE, COW OR SHEEP
CALL OR WRITE. FRESH OR ROTTED
Pacific Manure & Fertilizer Co., 429 DAVIS ST., SAN FRANCISCO

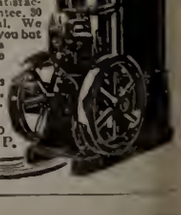
$18.30 PER HORSEPOWER

Can you buy a horse for $18.30? No! Yet you can get a six horsepower

DETROIT FARM ENGINE

for $18.30 per horsepower. This engine runs on Kerosene, Gasoline, Alcohol or Distillate with surprising economy. Saws wood, grinds feed, pumps, churns, separates, makes light, does any job around the farm. Simple in operation. Only 3 moving parts. No cams, gears, sprockets or valves. Positive satisfaction ten year guarantee. 30 day money back trial. We have an engine near you but want farmer agents everywhere. Write for particulars.

Detroit Engine Works
515 Bellevue Ave., Detroit, Mich.



$18.30 2¼ to 18 H.P.

Epistles of an Automobile to Its Maker

By Thomas Howard — Epistle IV

1—I am disgraced, mine beauty is marred and the paint scratched.
2—And who shall say the Gods created intelligence in the human.
3—For a man by himself be foolish, and a woman idiotic, but the man and the wife joined in auto-consultation are the ultra of lunacy.
4—So I write unto thee, Oh Factory, not in the vain glory of boasting in mine constitution.
5—But in the hope that he who reads of mine tribulation realizeth mine worth over the cars of inferior build.
6—And thine business may multiply through mine reliability.
7—Now on the day John Spark-Jones received notification to receive me from the country mechanician.
8—Maude Spark—saith unto her spouse. It seemeth to me thine finite brain absorbeth not the sayings of the instruction book.
9—And I doubt me if they ever will, therefore will I guide the destinies of our car.
10—Then did John Spark throw out his chest in the dignity of his manhood saying: What biteth thee so thou thinketh thine wits greater than mine.
11—Then she weepeth angrily informing him he buyeth the car for some other love.
12—And he expostulateth.
13—To which she retorteth.
14—So he explaineth.
15—And she censureth.
16—Then he humbly surrendeth as she expoundeth her woman's position since man let her vote.
17—Thus it came to pass Maude Spark-Jones handled mine wheel after John Spark had made payment to the country mechanician for my repair.
18—And our road led along the middle of the hills, so from the one side they look up, and the other side looked down the hill they skirted.
19—And she smileth and talketh boastingly of the manner a woman handleth me.
20—When he saith. Methinks we go in the wrong direction for we follow the sun which setteth West, and our town layeth toward the East.
21—So she stoppeth and telleth him to study the road map, which showeth their direction should be reversed.
22—And she asketh him what manner of fool he be that he failed to even understand the road map's direction.
23—Then he peevishly answereth. It was she who did the driving.
24—And she suggetheth he drive it himself and she could go home in a train.
25—Therefore, he succumbeth and she starteth to turn.
26—What saith the catalogue. The 1914 Roadster turneth in its length.
27—John Spark—declareth the catalogue spake truth, for the demonstrator proveth it.
28—And Maude retorteth it lied and there was no truth in it.
29—For when mine front wheel hitteth the grade which looketh down to the hill's base.
30—She throweth on more power, as he seizeth the wheel.
31—And we bring up in an orchard under the branches of a tree.
32—Which skinneth the tree, smasheth mine lamps, putteth a hole in mine Radiator, and bendeth mine fenders over the wheel.
33—Then they argue in their flurry, and she ordereth him pry me back to the road.
34—So he getteth a fence board and his jack, but I move not.
35—And she curseth the day God created her woman, for were she a man she was certain she could straighten me back.
36—And he sneereth and measureth the road which is full sixty feet wide.
37—Then he lighteth a smoke and he waiteth.
38—While she bereated his stupidity.
39—Presently a seven-passenger car came majestically along and seeth the trouble.
40—So he pulleth me out, but my water was gone, my front axle was strained and my fenders bent.
41—And he offereth them a ride to a railway town, which they perforce must accept.
42—Then he saith. May I ask the reason for your catastrophe.
43—And John Spark—answereth for his wife and saith. The woman God gave me turneth. Selah.

ORCHARD and FARM'S NEWEST GIFT TO ITS LITTLE BOYS AND GIRLS

FREE TAMBO The Clown Doll

Made Especially for Boys and Girls of Orchard and Farm's Family

The laugh of a child! What happiness there is in the lifting tone! What cheer it brings to the household! The laugh of a happy child—it turns the gray days to one of sunshine and gladness and the joy of living. And what will make a child happier, what will bring the dear little crinkles to the corners of the cherry lips more quickly than the funny face of a clown doll! Don't you remember when you sat with the little one on the seats of the great circus tent and watched the funny, rollicking clowns as they jumped here and there about the ring? Don't you remember, too, how that little one who accompanied you, laughed and crooned and clapped the tiny hands in the wonderful enjoyment of it all? There is nothing funnier, nothing more enjoyable to a child than the sight of a funny, painted clown, with his queer dress and his big, droll eyes. And so knowing this, ORCHARD AND FARM gave forth orders to its expert designers that they must produce the funniest clown in the world. The designers have done it. One look at TAMBO—that is his name, you know—and the children cannot help laughing. There are no tears when TAMBO is around—unless he should happen to be lost, for Tambo is funny. There is an air of happiness about him, a supreme manner which tells you that he knows he can bring the laughter—and he is perfectly satisfied with life. And Tambo has his own mission in life. The days may be stormy and dark, they may be cold and dreary, but where Tambo is, there is happiness. Should the months be those of winter, they will turn to summer again, for Tambo will bring back the days of the great spreading canvas tents, and the sideshows with their banners flapping in the summer wind, the great platform, where the man with the red vest taps loudly with his cane and shouts: "Step closer! Step closer—everybody—and see the snake with the gold tooth!" There is no need for the tents and the platform and the great lot with its lemonade stands, when your child possesses a TAMBO CLOWN DOLL. He is a circus all in himself. He never loses his temper. He never loses his smile. He never loses his funny outlook on life. He is Tambo the merry, day in and day out. Day after day the designers for ORCHARD AND FARM worked and studied that they might produce the funniest, the happiest little doll in the world—and they have succeeded. Queer, indeed, is the child who will not laugh at "Tambo."

TAMBO, the Clown Doll

is about 17 inches high and is the best playmate any child could desire. You can't help but laugh when you see its cute, funny face. Tambo is beautifully lithographed in many colors on good quality cloth, all ready for cutting out and stuffing. When stuffed, the limbs are movable, permitting the doll to be placed in any kind of position. It is much preferable to a china or wax doll, being practically indestructible. They can't be broken, no matter how thrown about. Tambo is dressed in fancy costume and you are not put to the trouble of making clothes.

GIRLS AND BOYS:

Children—ask your father or mother help you get Tambo, the clown doll. They can simply renew or extend the family subscription for one year at 50c, and Tambo, the clown doll will be sent as your premium. Later, when you see how cute Tambo is, you may want to get some more for a birthday present to give some of your friends. This you can do by getting some subscriptions. The work is not hard.

MOTHERS:

There isn't anything you could possibly give your children that would give them so much pleasure, or do them and you the same amount of good as Tambo, the clown doll. If your own child is now too old to care for a doll, make happy some other girl or boy by a present of Tambo. If your child wants the doll and is old enough to do the small amount of work necessary, please encourage and help it. This doll alone retails for 35 cents, and is well worth the money. Order now while you have the matter before you.

How to Get Tambo, the Clown Doll

Send us a new subscription for ORCHARD & FARM, which is only 50c per year, and Tambo will be sent free of all cost to you by return parcel post. If you cannot get a new subscriber for ORCHARD & FARM, just get your papa or mamma to extend your own family subscription for another year at 50c. Send us this subscription, and by return mail we will send you Tambo.

(Coupon)

ORCHARD & FARM,
Hearst Building,
San Francisco, Cal.

Enclosed please find 50c. Please mail to address below ORCHARD & FARM for one year and Tambo, the clown doll, as per your offer above.

Name_____

Town_____State_____

_____
(Name of party to whom Tambo should be sent.)
Return this coupon with order.

The Household Exchange

Christmas is coming. "Shop early" is the slogan, and it will be changed somewhat in these columns so that the idea will be "prepare early." The first of November will not be any too early, at that, for suggestions to be published for Christmas gifts. If you have a good idea regarding home-made or bought Christmas gifts, simple, inexpensive or unique, send it in for the Household Exchange next month and authors of all published will be remembered with some article of value for the house. For our December issue we expect to have as the subject of the Household Exchange, "My Favorite Christmas Dish," telling how to make good dishes for the Christmas table, so, if you have some Christmas receipt of which you are especially proud, be ready to send it in for the December issue, or earlier, if convenient.

For each of the first two suggestions will be given a coffee percolator; for each of the next three a set of six kitchen knives, and for the others used a hair brush and comb.

When sending in suggestions the following rules must be observed:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only, and sign name and addres safter each suggestion.

Not more than two suggestions a month may be sent by one person, and only one award will be given to one individual in a single month. Do not send a letter with your suggestion. The suggestion itself is enough.

Address all your suggestions to Household Editor, "Orchard and Farm," Hearst building, San Francisco.

We wish to particularly emphasize the importance of keeping the suggestions within the limit named for length.

The suggestions for this month, which relate to made-overs in the way of clothes, follow:

Wornout Raincoats.

From the best parts of a discarded raincoat make a large apron with bib to wear on wash days. The smaller pieces can be used for a bathing cap, and strips too narrow for other use can be joined and made into a bag to carry a bathing suit.—MRS. C. R. FIELD, San Jose, Cal.

Freshening Old Cloth.

In making over garments everything should be first ripped apart, washed and pressed, and dyed if it is faded. If shiny, sponge with hot vinegar, using a piece of goods the color of the cloth for sponging. Lay a thin piece of muslin over it and press with a hot iron. This makes the goods look quite new.

For buttonholes on goods that fray, cut the buttonhole, then draw a hot knife over a piece of beeswax, then through the holes. One waxing will do five or six. This prevents fraying, and is a tailor's secret. Also when turning a hem, soap the inside of hem with brown laundry soap, turn up and press.—MRS. F. SWANSON, Fallon, Cal.

Making Over Old Gown.

Cut off the worn top of an otherwise good nightgown. For a new upper part cut from muslin, all-over embroidery or make of small pieces of lace or embroidery a rectangular top as wide as the gown, with a square opening for the neck and allow the sleeves to be open. Then ornament the nightgown in any way pleasing to the taste.—MRS. J. J. O'CONNELL, Washington, D. C.

Undershirts and Pants.

The tails of wornout undershirts can be made into undershirts for little ones. Turn upside down, putting seam on shoulder, cutting out arm holes and neck and either bind neck with soft material or buttonhole stitch it with flour sack thread and they will make a very good undershirt by putting on to waist, putting a row of fancy stitches around bottom with silkalene thread.

Papa's old wool pants can be ripped and washed and many kinds of cloth can be turned with wrong side out and a pair of knee pants can be made. Get a pattern or cut pattern from a bought pair.

Old shirt tails will make a very good dish apron for the little ones just learning how to wash dishes, a pocket in it will make it attractive. The back part of two pairs of men's overalls will make the small boy a good pair with bib, making buttonhole in strap and sewing two large buttons on bib.—MRS. EMMA E. SMITH, Millville, Cal.

Turning Collars on Shirts.

If you notice, men wear out their collars while the rest of the shirt is good. Rip the collar part off, leaving band on the shirt, turn the worn part outside, sew on and turn it down and the worn part never shows and the shirt will last almost twice as long. I fix woollen shirts this way, too, and it's quite a saving. Of course, one must be careful not to stretch the collar part when ripping off or it won't go on. Even this is for shirts that have the collar sewed on.

Sheets are worn much longer it torn into when getting thin in center and the outside edges sewed together for the center. Hem the sides and you have a good sheet for a long time.—MRS. J. O., New Meadows, Idaho.

Patching Stockings.

Economy must be practiced in time as well as in money. One economy which will be found useful is the substitution of a patch instead of darning a very much worn stocking, especially when the heel is worn threadbare by the rubbing of low shoes. An easy way to do this is to cut a piece from an old stocking as near the same texture as the one to be mended as possible. Sew this smoothly around the stocking darner and slip the worn stocking into place over it. It is now an easy matter to whip the edges neatly down over the patch. Turn on the wrong side, cut away all superfluous material and an ordinary half hour's work is accomplished in five minutes.—MRS. ARTHUR LENNOX, Washington, D. C.

Children's Drawers.

Looking over the children's winter undergarments, one usually finds the drawers too small and buttonholes frayed. Sew up the old buttonholes. Make new muslin bands and sew to the tops of the old bands. Make buttonholes in new bands and you have remedied both faults and saved the price of new garments.—MRS. A. A. KEENEY, North Cucamonga, Cal.

Madeover Clothes.

The narrow skirt and sleeve of today lessens very materially the value of any garment being made over for anyone except small children. A few things that can be successfully made from worn articles are: A child's coat or a little boy's suit, from a lady's or gentleman's large coat; boy's pants or overalls from the father's old ones; child's dress from old silk or poplin dress. Nice warm bloomers for the little girl can be made from most any color of old woolen goods, such as skirts, shirts, etc. They are one of the finest uses for which old woolen goods can be put to real actual soul-gratifying service. The main thought in madeover articles is, a quarter saved is a quarter made, but don't use a dollar's worth of energy in making and a dollar's worth of dissatisfaction in wearing a garment of this kind to save your quarter. Napkins for school lunches from table linen, wash cloths from Turkish towels and dish cloths from knit underwear are all little economies worth the time used to hem them up.—MRS. WM. E. KING, Castle Dale, Utah.

Odds and Ends.

In making over clothes there is a quantity of nice wash material in every household, which I have found after much inquiry is seldom thought of as a possibility of its further use, and that is the men's shirts. They are made of such good material, and even after the shoulders and bosoms are quite worn out I have used the rest for sailor collars, belt bands and pipings, and have found them to last as long as the new material. When the prevailing style calls for so much contrasting material, the pretty striped ones can be used to a great advantage, both on house dresses and children's clothes.—MRS. R. J. R. Nevada City, Cal.

Using Old Blankets.

Put two (or even three) together, and be very careful to try and not let the thin places of one come in the same part as the thin places in the other. Darn down all thin places and holes carefully on both sides. Quilt very wide, say eight inches apart—by hand or with your machine, if it will do it well. Then bind round carefully with a nice colored binding. You will find these wear quite a long time and are strong for throwing off and on the bed, and it is cheaper than buying challie or 10 cent material and making them into comforters.—MRS. R. S. KNGHT, Meadow Brook, Santa Rosa.

"If those who whine would whistle,
And those who languish laugh,
The rose would rout the thistle,
The grain outrun the chaff."

THE HAND THAT RULES THE WORLD.

They say that man is mighty, he governs land and sea;
He wields a mighty sceptre o'er lesser powers that be;
By a mightier power and stronger man from his throne is hurled.
And the hand that rocks the cradle is the hand that rules the world.

Blessings on the hand of woman! angels guard its strength and grace,
In the palace, cottage, hovel, oh no matter where the place!
Would that never storms assailed it, rainbows ever gently curled;
For the hand that rocks the cradle is the hand that rules the world.

Infancy's the tender fountain, power may with beauty flow;
Mother's first to guide the streamlets, from them souls unresting grow;
Grow on for the good or evil, sunshine streamed or darkness hurled;
For the hand that rocks the cradle is is the hand that rules the world

Woman, how divine your mission here upon our natal sod!
Keep, oh keep the young heart open always to the breath of God!
All true trophies of the ages are from mother-love impearled,
For the hand that rocks the cradle is the hand that rules the world.

Blessings on the hand of woman! fathers, sons and daughters cry,
And the sacred song is mingled with the worship in the sky—
Mingles where no tempest darkens, rainbows evermore are hurled
For the hand that rocks the cradle is the hand that rules the world.

I find a vacuum or suction washer a great help in the washing of blankets and quilts. One may be bought for from one dollar to a dollar and a half and it will pay for itself in labor saved during one spring cleaning.—MRS P J ANDERSON, Conrad, Mont.

Bulbs for the Flower Garden

By Alfred W. Hincks of C. C. Morse & Co.

There has been considerable inquiry this year as to whether there would be a supply of bulbs to plant. The seedsmen have not known until recently whether or not Holland and France would be able to supply the bulbs which usually come from those countries. Word has come now that all bulbs are on the way, and have passed New York and will arrive at the usual time, which is October 1. Plan your beds, therefore, and prepare to plant.

There are several considerations of very different sorts to be thought of: The first is time—you very likely want a succesion of flowers in your garden beginning with those flowers which bloom in midwinter and taking in those which last until summer. A second consideration is height: Short varieties look best near walks and tall varieties in the background. A third is the color; a fourth is the fragrance; then there is, too, the location, the amount of space, the price and, over all, plant those sorts which you really like.

These bulbs bloom early and should be planted early: Narcissus, Paper White, Grand Monarque and Soleil d'Or; Freesias; French Roman hyacinths; these all may be had in bloom in the first part of January if planted in September. If planted in October they will bloom toward the end of January. It so happens that all are deliciously fragrant.

Freesias have an exquisite perfume, and once planted live for years. They have grass-like foliage and make good borders, the flower stems will be about six inches long the first year, unless they are drawn up by keeping the sides dark, such as putting a board on each side of the row. The stems may be had eighteen inches long. Another bulb which should be planted early, not because it flowers in winter, but because the bulbs do not keep, is the handsome St. Joseph lily—the hardiest of white lilies for the garden. This lily should be set out in September and will bloom in May—most lilies bloom two months later than this.

After the bulbs mentioned above these sorts come into bloom: Blue and White Flag Iris if the roots have been planted two years, otherwise they flower in May. Crocus, Scillas, Snowdrops and Triteleya flower in March. Hyacinths, the first of April, Daffodils during all of April, also Lily-of-the-Valley. Late Long-Stem Tupils during May, also Spanish Iris, Anemones, Ixias, Ranunculus, Poeticus Narcisus, Sparaxis, English Iris during June, also early flowering Gladiolus, Incarvillea, Iris Gigantea, Germania and Susiana. July is the month for Lilies, Calochortus, late Gladiolus, Hyacinthus Candicans, Bleeding Heart and Tuberoses. Montbretias are in flower now and until the end of summer. Colchium or Autumn Crocus is another satisfactory late-summer flower. Here certainly is a long list to choose from. A great many people think of only Hyacinths, Daffodils and Tulips when "bulbs" are spoken of, but some of the lesser-known sorts mentioned above are deserving of a very much wider planting.

One great thing about bulbs is that they have the flower bud and stems all ready made and stored inside of their thick covering, just waiting to be sent up into the most glorious flowers. The covering, too, is a storehouse of plant food ready to give a good start to the early growth. This is why bulbs are able to bloom early in the season and why there are few failures—the plant is strong to start with. If you plant bulbs you may look for good results almost without question; and if you can leave the bulbs in the ground just where they are and let the bed be dry after they have flowered, you may expect even better flowers the following year. If you cannot let the bed dry up, then leave the bulbs in four or six weeks after flowering, when the leaves will dry and the bulbs may be safely taken up and stored in dry earth and kept until fall, when they can be replanted. These sorts can be kept year after year in any ordinary flower bed; Daffodils, Jonpuils, Agapanthus, Montbretia, Flag Iris or German Iris.

When planting do not put manure or fertilizer into the hole, but if the soil is heavy put a little sand around each bulb. A month before planting bulbs a good enriching of well-rotted manuer thoroughly dug into the bed will be beneficial.

Where bulbs are set in beds and wanted to bloom all at one time, like hyancinths, be sure to set the bulbs all at an even depth. If your flower bed is of heavy soil and wet, place the bulbs nearer to the surface han if the soil is light or sandy. The following table gives the correct depth to plant, and is measured to the top of the bulb:

Hyacinths—Plant 4 inches deep and 7 to 8 inches apart.

Daffodils—Plant 3 inches deep and 6 to 7 inches apart.

Jonquils—Plant 1 inch deep and 4 inches apart.

Tulips (long stem)—Plant 2 inches deep and 6 to 7 inches apart.

Tulips (early bedding) — Plant 2 inches deep and 4 inches apart.

Lilies—Plant 5 inches deep and 18 inches apart.

Anemones—Plant 1½ inches deep and 4 to 5 inches apart.

Calochortus—Plant 2 inches deep and 3 inches apart.

Crocus—Plant 1 inch deep and 2 inches apart.

Freesias—Plant 1 inch deep and 3 inches apart.

Gladiolus (early flowering)—Plant 1½ inches deep and 5 inches apart.

Ixias—Plant 1 inch deep and 4 inches apart.

Ranunculus—Plant 1 inch deep and 5 inches apart, prongs pointing downward.

Old Dutch Breeder Tulips are the "rage" just now. These have mahogany tones and brownish tints, which a few years ago were not largely planted; but now every one wants these "art colors" in his garden. The flowers are of magnificent size, and are among the most handsome Tulips. As companions to these are the Darwin Tulips and Long-Stemmed Tulips. Darwins have handsome reds and claret tones, also pinks and carmines, and even a good lilac—Rev. Ewbank. Clara Butt is a truly lovely flower of a beautiful, warm-toned pink; Pride of Haarlem is large and is a deep pink. William Pitt is a fine carmine, and Philip de Comines is a large velvety dark purple. Several of these tulips will be planted at the Panama-Pacific Exposition grounds. Remember that there are no yellow Darwin Tulips; the best yellow is Parisian Yellow or else Gesneriana Lutea; these two are quite similar. Inglescombe Scarlet is a fine bright orange-red. La Merveille is a tulip which has been much admired, a beautiful salmon pink overlaid with orange red. One of the most satisfactory Tulips is the giant scarlet sort. Gesneriana Major. This has fine, large flowers of brightest color, and always does well in the garden. The price is cheaper than ever this year, and these may be had in packages of two hundred and fifty (250) up at the rate of $14 per thousand.

This coming year you will want a fine display in your garden, and nothing better than these Long-Stemmed bright Tulips could be had. Let us get out and plant freely, both for our own pleasure and to give to our many expected visitors this coming year the remembrance that "California is truly the Land of Sunshine and Flowers." Nature will do her part—how about you?

Olympia is a larger Daffodil than any other. It is the same style and shape as Emperor, but much finer and larger. Be sure to plant at least one Olympia Daffodil, if you want to realize what a grand Daffodil is.

Early planting makes strong plants and fine, large flowers. October and November are the months to plant bulbs, and the earlier they are in the ground the better. Some summer-flowering bulbs do not ripen until later, but these are the exceptions and not the rule. Plant early.

Sunny situations are preferable for planting bulbs, although most will do well where they get sun a part of the day. Daffodils do well in partial shade. The finest English Iris I have ever seen were raised on the north side of a house and under the water-spout from the roof. Japanese Iris needs a real wet place. Lily-of-the-Valley require a shaded place and a mulching to keep the soil always moist. Remember to water regularly and freely all bulbs which are coming into bloom; then is the time they require a good supply. Manure water made by soaking rotted manure in water will help at that time. After flowering stop the water on bulbs and let the leaves die back, but do not cut them off while green, otherwise the bulb will not flower next year.

Be careful this year and don't put the English Iris next to the German Iris. You might next morning find the beds torn up and the bulbs and roots "all shot to pieces."

CURE FOR COLIC.

I have personally known of many of the worst cases of cramp colic and bilious colic that have been almost instantly relieved by the following simple remedy: One teaspoonful of table salt, one teaspoonful of black pepper, dissolved in one cup of as hot water as can be swallowed.

This has never failed in a single instance of which I have known.—MRS. MARY McCRAE CULTER, El Modena, Cal.

PREVENTING LOCKJAW.

Take a small bottle and fill about one-fourth with turpentine, heat in a vessel containing water until it is as hot as can be borne. Apply mouth of bottle to the wound, then pressing tightly, turn bottle upside down and continue to hold in his way for about ten minutes. It causes the flesh to be drawn into the neck of the bottle, drawing out the poison and disinfecting the wound so that no inflammation ever appears.—MRS. C. M. HOWARD, Otay, Cal.

CHEESECLOTH COVERS.

I find that a supply of cheesecloth squares in my pantry drawer is one of my most efficient aids in keeping food clean and sweet. They are better than tight covers, because they permit a circulation of air, while dust and flies are excluded. Empty salt or meal bags, washed and ripped open, answer the purpose very well. A pair of embroidery hoops will be found useful, where the covers are likely to sag or blow.—E. G. H., Fulton, Cal.

Skimmed milk, which can be had at any time, will clean kid gloves much better than gasoline. Stretch the glove out on a clean cloth and take a clean white rag, wring it out in the milk and proceed to rub the dirt spots. Frequently wring out in the milk and renew it when too soiled. Wipe with a dry cloth when done and when almost dry stretch the fingers out across the hand.—MRS. B. KINDSCHER, Oxnard, Cal.

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.

Largest pipe works in the West.

WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

IRIS Plant Iris novelties in the Bulbous and Oncocyclus & Regelia Sections this month. Send 15 cents for our new illustrated Iris Catalog.

The Dean Iris Garden, Moneta, Cal.

25 Xmas, N. Year & Greeting Post Cards 10c—Try us and be satisfied. Ger. Am. Post Card Co., Dept. W, Burlington, Ia.

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted FREE
Watson E. Coleman, Patent Lawyer, Wash., D. C.

FREE

Send for this Big, Free, Furniture Catalog

"I Will Trust You Gladly"

"Select what you want from my catalogue and all you need to do is write to me to open YOUR charge account ON TERMS TO SUIT. I am a believer in the average home lover. I don't have any iron-clad rules or red tape, because I'm sure that you'll be as square with me as I will be with you. I want you to write for my big FREE Furniture and Home Furnishing Catalogue NOW, see beautiful things on which I'll be pleased to give you

30 Days' Home Trial

"I want to prove to you that I can give you wonderful low BARGAIN prices on EVERYTHING in the household line. My NEW credit plan is the most liberal, most helpful one ever devised for home lovers—so send today sure for my FREE Book and read all about it. As a sample of my low prices look at this

Big Rocker Bargain
Only $4.95

In easy paym'ts of 50c per month and shipped you on 30 days' trial. You can see what an elegant rocker this is. It is made of high-grade solid oak, profusely carved. A large, roomy, comfortable, well made Rocker, high, wide back, fully tufted, buttoned. Upholstered with high-grade black, Boston Leather. Seat is made over full steel springs; has beautiful ruffled edge. Shipped on 30 days' trial. Price $4.95. Terms, 75c cash with order, balance 50c monthly. Order direct from this advertisement and send for FREE Book of Bargains today sure."

Order No. 3501

M. FRIEDMAN & CO.
261 Post Street San Francisco, Cal.
Sign and Mail this Coupon NOW

M. FRIEDMAN & CO., 261 Post St., San Francisco, Cal.
Please send me, free, your complete Bargain Catalogue with Prices, Easy Credit Terms and information, without the slightest obligation on my part.
Name .....
Street .....
Town ..... State .....

Orchard and Farm Pattern Department

No. 5868—Ladies' Jacket. Having back and sleeves in one piece. Front of skirt section lapping or cut away. Length of jacket at center-back from neck to lower edge, 48½ inches. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 3¼ yards 54-inch material. Price, 15 cents.

No. 5869—Ladies' Three-Piece Skirt. High waistline, with plait at center-back, and closing at center-front or at left side seam. Four-piece plaited tunic perforated for open front and having a three-piece yoke. Width around lower edge about 1½ yards. Sizes 21, 22, 24, 26, 28, 30, 32 and 34 waist. Size 26 requires 3⅝ yards 54-inch material. Price, 15 cents.

No. 4719—Misses' Straight Side-Plaited Skirt. High waistline. Width about 2⅜ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 2½ yards 54-inch material. Price, 15 cents.

No. 5881—Misses' and Ladies' Waist and Tunic. Waist with or without cape, having Directoire or round collar, long shoulders, long one-piece sleeves perforated for short sleeves, adjustable shield, with high, square or round neck; no lining. Three-piece tunic perforated for shorter lengths. Sizes 32, 34, 36, 38, 40, 42 and 44 bust, and 14, 16, 18 and 20 years. Size 16 years requires 2¾ yards 54-inch material. Price, 15 cents.

Braiding No. 12089; transfer pattern, 15 cents.

No. 4460—Ladies' Pajamas. With coat front in either of two outlines. Full-length one-seam sleeves perforated for shorter length. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 5⅜ yards 36-inch material. Price, 15 cents.

No. 5294—Ladies' Shirt Waist. Having high or open neck. Shirt sleeves perforated for short sleeves. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 1⅞ yards 44-inch material. Price, 15 cents.

No. 5841—Ladies' Shirt Waist. Without lining. Having attached round collar or adjustable square collar. Shield having high, round or square neck. Long one-piece sleeves perforated for short sleeves. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 2¼ yards 36-inch material. Price, 15 cents.

No. 5835—Girls' and Children's Nightgown. Having bishop sleeves perforated for short sleeves, or having cap sleeves. High neck with collar, and perforated for low neck. Sizes 2, 4, 6, 8, 10, 12 and 14 years. Size 8 requires 3⅛ yards 36-inch material. Price, 10 cents.

Scallop No. 11747; transfer pattern, 15 cents.

No. 5838—Ladies' Apron. With or without pockets. Cut in one size only. Requires ½ yard 36-inch material, 3½ yards of edging and 5 yards of ribbon. Price, 10 cents.

Embroidery design on large view is No. 11990; transfer pattern, 15 cents. Design on small view is No. 11964; transfer pattern, 10 cents; and scallop No. 11661; transfer pattern, 15 cents.

A FABLE.

The following is an allegory,
Or just a fake newspaper story,
Or, if you keep insisting still, I
Will own up that it's just a lie.

Said Wrong to Right: Let's compromise,
Sugar beats vinegar catching flies.
You yield a point, and I'll yield one;
And everything will smoothly run.
We'll save a lot of useless fuss,
And it will profit both of us."
Said Right: "My rule has been for long
Never to compromise with Wrong."
"All right," said Wrong. "Just spare rebukes.
We'll fight it out. Put up your dukes."

And so they fought. And say, that fight
Was worth the price, all right, all right.
Right sure was strong, his blows terriffic;
But Wrong was much more scientific.
And then, besides, to save his pelt,
He often hit below the belt;
Though, if this tale were strictly true,
I'd have to own that Right fouled, too.
Wrong soon a bad black optic got;
But, used to that, he minded not.
A valiant knight of evil he.
Full long he fought and stubbornly.
He showed that he was in fine fettle.
A focman worthy of Right's mettle.
And by and by Right's eyes grew dim.
Wrong knocked him down and sat on him.
Said Right and struggled to arise:
"Say, Mr. Wrong, let's compromise."
The moral now, and then we'll stop:
It makes a difference who's on top.

FOR THE SICK ROOM.

An invalid's room can be made lovely and fragrant if a sponge is soaked in some oil of lavender and then wrung out. Allow it to dry. Put the sponge in another saucer and pour boiling water on it every morning and renew the oil of lavender every two weeks. A most delightful fragrance will permeate through the room when the boiling water is poured on the sponge.—RITTA BROWN, Los Angeles, Cal.

SURPRISE TOYS.

When it is convenient buy two or three simple toys and put them away for emergencies, when the children are sick or fretful or the weather is stormy. Bring them out one at a time. The pleasure of the surprise will work wonders.—E. G. H., Fulton, Cal.

SCRIM CURTAINS.

To get scrim curtains even hang first, then draw white thread through desired length and hem and you will have them even and both curtains the same length.—MRS. JAS. LEUTHOLTZ, Birds Landing, Cal.

Oftentimes top-heavy bouquets tip over, spilling water and breaking the vase. A good way to prevent this is to put a cupful or more of beach sand in the vase.—MRS. A. J. PLATT, Napa, Cal.

The way to make the country home attractive to the young folks is to have the home surroundings conducive to comfort. Money and time spent in this department of the farm is well spent.

NEVERTHELESS.

He heard the fifes at the end of the street,
He heard the marching of thousands of feet;
The rush and the murmur, the beat of the drum,
The sudden strange delirium;
He saw the golden banners and flying flags,
The rapturous faces of lads and hags;
The light romance, and the gleam of it all,
The wonder, the magic, the dream of it all,

But he did not see the lonely campfires burning
On distant fields; and he forgot the yearning
Of aching hearts when nights were filled with dread;
He did not see the piteous, helpless dead.
He did not think of sorrows and alarms
The empty years that mocked his empty arms;
He did not think of sorrow and stained hill
Yet had he thought, he would have followed still.

—Charles Hanson Towne.

WINE JELLY FOR INVALIDS.

Pour two ounces of cold water on one-half ounce of granulated gelatine and six ounces of sugar. Soak for 15 minutes and stir into ten ounces of boiling water until dissolved. Add four ounces of sherry wine, strain through a jelly bag or coarse toweling and cool.—MRS. J. B. JACOBS, Vacaville, Cal.

Delicious Pot Roast cooked without water and without burning

Place the kettle empty over a low flame. In the heated kettle, sear the roast all over. Turn down flame. When half done, turn meat over. Be sure to use the

"Wear-Ever" Aluminum Windsor Kettle

Look for this trademark

"Wear-Ever" utensils give enduring satisfaction—cannot chip or rust—are pure and safe.

Replace utensils that wear out with utensils that "Wear-Ever"

Write for booklet, "The Wear-Ever" Kitchen. It tells you how to save fuel, time and strength.

WANTED: Men to demonstrate and sell "Wear-Ever" Specialties. Only those who can furnish security will be considered.

The Aluminum Cooking Utensil Co., Dept. 63, New Kensington, Pa., or Northern Aluminum Co., Ltd., Toronto, Ontario
Send prepaid 1 qt. "Wear-Ever" Stewpan. Enclosed is 20c in stamps—money refunded if not satisfied.

Name .....
Address .....

Time Yet to Build Your Home Before Winter

ONE OF OUR HOUSES.

With our plans and your hammer, home-building is an easy matter. We furnish the lumber, trim, doors, windows, cut and numbered to fit our plans. Also finish, paint, stain, hardware, plaster or interior wallboard. Just follow our plans and a permanent, substantial and attractive home will be yours. Your own ideas carried out. Catalogue of plans, free. Write to-day.

Ready Built House Company
984 Broadway, Portland, Oregon.

You Should Worry!
Make your basement pay your rent and feed bills. **$250 to $300 per year.** Anyone can raise mushrooms by my "Simple Method"
I will send you 8 bricks of spawn and book for $2.50, f. o. b. Oakland, Cal.

F. H. (Mushroom) Davis, 671 53d Street.

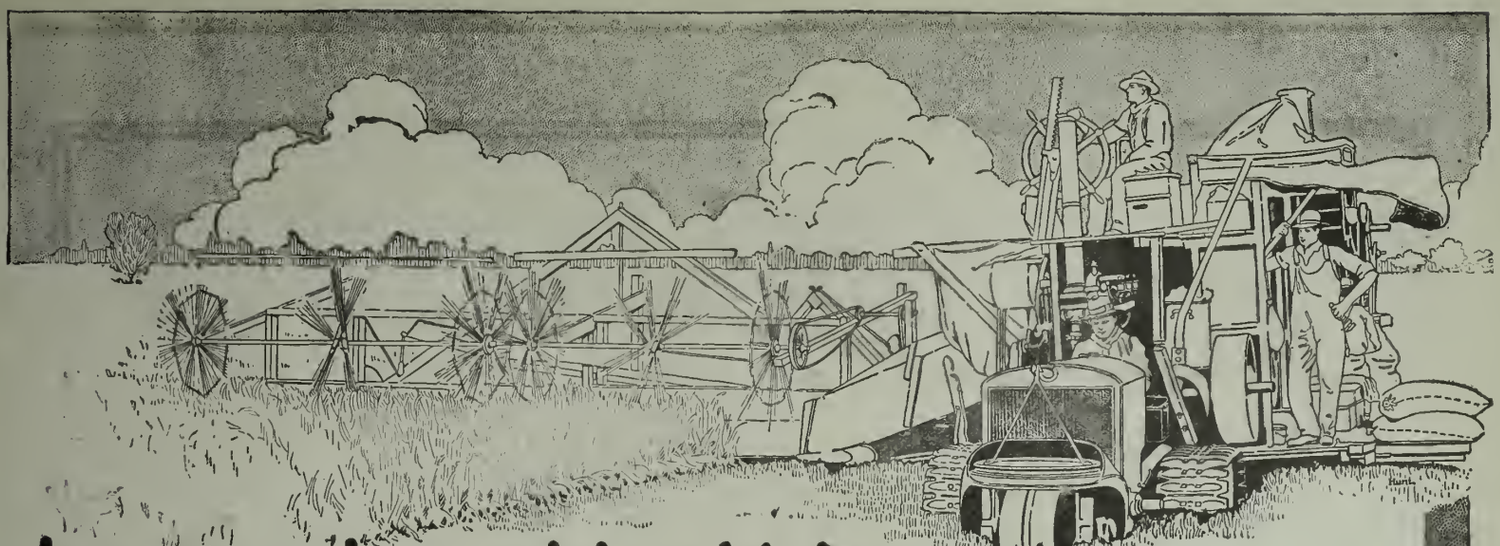
BARGAINS IN ARMY AND NAVY GOODS

U. S. Army Navy Hats	$0.75 up	U. S. Army Shoes	$0.75 up
U. S. Navy Hats	.45	U. S. Army Trousers	2.45 up
Fine Revolvers	1.95 up	U. S. Army Iron Beds	2.50
Magazine Rifles	2.95 up	New Mauser Rifle	8.95
Blue Wool Overcoats	2.95	Army Wool Shirts	.95 up
Wool Army Blankets	2.50 up	Shoemate Razors	.50
Khaki Pants & Coats	.75 up	$3.00 Army Bridles	1.40

$00 Bargains in Saddles, Harness and Leather Goods.
We are the largest dealers in U. S. Army and Navy Goods in the world, send for our new "Book of 1000 Bargains" it is free.
U. S. Dept. 260 St. Louis, Mo. Branches: Address: CAL NIRSCH & SONS. Los Angeles, Chicago, Boston, Kansas City, El Paso.

PLAN
TO ATTEND THE
Dairy Show
MODESTO
OCTOBER 15, 16, 17

When answering advertisements, please mention "Orchard and Farm."



harvesting with a Yuba

Ever lose a crop because you couldn't get the horses and men you needed for harvesting?

The Yuba Ball Tread Tractor is a one-man machine. Any farm-hand of average intelligence can operate it and keep it in condition.

High-grade materials and careful construction cut the danger of break-downs to a minimum.

THE YUBA BALL TREAD TRACTOR

It is built to haul a combined harvester equipped with auxiliary power for driving the cylinders.

As a stationary power plant it will drive a big thresher.

For harvesting, as well as other farming operations, The Yuba Ball Tread Tractor is a labor-saver and cost-cutter.

There is a booklet telling how and why.

THE YUBA CONSTRUCTION CO.

433 California Street, San Francisco

Dept. B-5

Works, Marysville

Overland $1075

MODEL 80

The Latest and Greatest Overland of All

Motor 35 h. p.
New full stream-line body
Instrument board in cowl dash
Individual front seats, high backs
Tonneau, longer and wider
Upholstery, deeper and softer
Windshield, rain vision, ventilating type, built-in
Crowned fenders
Electric starter
Electric lights
High tension magneto
Thermo-syphon cooling
Five bearing crankshaft
Rear axle, floating type
Springs, rear, 3-4 elliptic, extra long, underslung
Wheel base, 114 inches
Larger tires, 34 inch x 4 inch
Demountable rims—one extra
Left hand drive
Beautiful Brewster green body finish
Complete equipment

The Willys-Overland Company, Toledo, Ohio

Two passenger Roadster $1,050 Prices, f. o. b. Toledo, Ohio

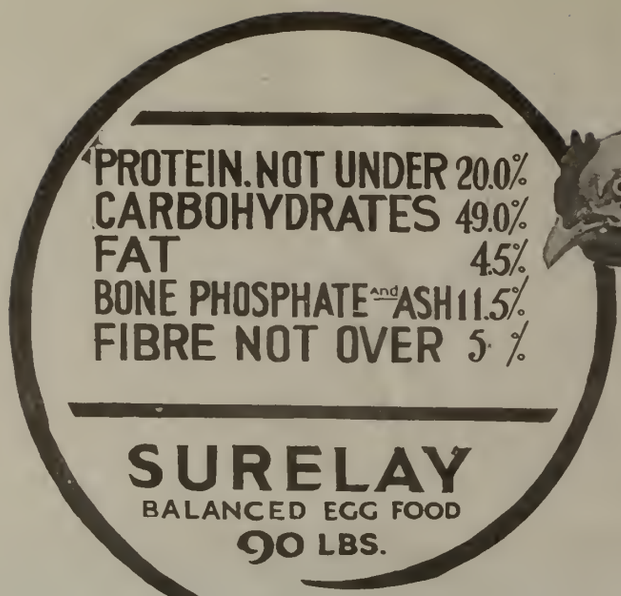
ORCHARD *and* FARM

ESTABLISHED 1888

IRRIGATION

NOVEMBER, 1914

California State Libr



This—

Makes me lay more eggs and costs you less

The above analysis is on every sack of Surelay.

"What's on the Sack is in the Sack, and that's what's in the Egg." When you feed Surelay, the balanced egg food, to your chickens you give them the very elements that the egg is made of.

Surelay makes hens healthy. And a healthy hen is usually a laying hen—if the feed is right.

To obtain a perfectly balanced egg feed takes time, knowledge and scientific effort. More than that—it will cost you more than if you bought it ready-mixed.

SURELAY

BALANCED EGG FOOD

is made almost entirely from the by-products of the great Sperry Mills and in its manufacture the same rigid rules of cleanliness and sanitation are observed as in the making of the famous Sperry products for human consumption.

Ask about the Surelay Coupon in every sack.

The more Surelay you buy, the cheaper you get it. There is a coupon in every sack, fifteen of which are good for one Free Sack. This reduces your cost approximately 15 cents per sack.

Ask for the Booklet, "Makes Hens Happy."

We will send it to you free. It contains valuable facts about the raising of chickens.

Fill out the coupon and send for it to-day. Address all communications to the Stock and Food Department.

Please send me "MAKES HENS HAPPY" and Sperry Profit-Sharing Coupons.

Name .....

Address .....

SPERRY FLOUR CO. Stockton, California

ORCHARD AND FARM

IRRIGATION

Vol. XXVI NOVEMBER, 1914 No. 11

The Poultry Industry of the Future

By J. E. Dougherty

What is to be the future of the poultry industry in California? With the spirit of co-operation looming so large on the agricultural horizon, with the new marketing possibilities that have been opened up by the establishment of the parcel post, the possibilities of getting eggs and poultry more directly from farm to consumer while they are still perfectly fresh are steadily improving.

Within the last decade or so we have come to strongly realize that methods of farming have got to become more and more intensive if our food supply is to keep pace with the increased demands as a result of the steady increase in population; we are learning to appreciate the value of scientific farm management methods in reducing the operating costs by uncovering the leaks, increasing production, marketing the output to fat better advantage as a result of a careful study of marketing conditions, etc.

Hundreds of thousands of dollars' worth of poultry products are imported to California every year. The population is rapidly increasing, both from within any by the addition of a steady stream of newcomers that pours into the State annually. This means a steadily increasing demand for whom home-grown poultry and eggs over all the State, for these are staple articles of food occupying as important a place in the diet as beef or mutton—yes, and the importance of poultry and eggs in the menu is rapidly growing as other meat foods become more searce and higher in price.

The report of the Secretary of Agriculture for 1912 states: "Poultry is another industry of great wealth production on the farm. Here is an illustration of how large an aggregate of an immense number of little things can become. An egg may be worth only a cent and three-quarters, and yet 1,700,000,000 dozen eggs are worth $350,000,000. If to the value mentioned is added the value of the fowls raised, the products of the poultry industry in the United States for 1912 amounts to $570,000,000. This is nearly equal to the value of the wheat crop and exceeds the value of the oats crop."

As the tide of population has moved westward it has steadily pushed the frontier farther and farther westward and finaly dumped it into the Pacific ocean. The new farming land is now practically all taken up, yet the population of our country continues to increase. As a result methods of farming have got to become more intensive, and the need for more exact and detailed knowledge in the sucessful management of intensive farming operations has given a tremendous impetus to the forward movement of agricultural education in the last decade. The very words "extensive" and "intensive" significantly express the difference between the new and old types of farming. We can no longer take up a piece of virgin soil, exhaust the vitality and fruitfulness and profit out of it by indifferent and careless methods and then move to another virgin piece. We have no more virgin soil to squander. It is all gone. The numbers of people who want land are steadily increasing, but the limit of our agricultural expansion over new lands is about reached. From now on our attention must be turned to more efficient use of the land we have, which means the cutting up of large ranches into small holdings that will be intensively farmed and the productivity most zealously conserved.

And in the development and maintenance of the best efficiency on our agricultural lands poultry is going to play a most important part. Poultry as an adjunct to orcharding represents one means by which orchards may be more intensively farmed and their productivity maintained. The dairyman, in looking for a profitable way to utilize the skim milk, is finding it to be one of the best animal feeds that can be fed to poultry, since it stimulates growth and egg production and aids in reducing the food cost per dozen eggs to a minimum.

A Typical California Flock of Utility White Leghorns on a Well Managed Ranch.

The man living in the suburbs with only a small portion of ground at the back of his house, can profitably keep a few fowls to furnish the family with fresh eggs and table fowls at very small cost. The kitchen scraps that would otherwise go to waste can be utilized to form a large part of the feed needed by the few fowls kept, and the manure produced will prove a most valuable fertilizer for lawn, flower beds and vegetable garden.

In fact, poultry raising has a place in the economic management of every sort of agricultural pursuit, from the garden operations of the suburban dweller to those of the large rancher, and the poultry industry, both as an adjunct to other branches of agriculture and as a specialty, will continue to increase in importance in California with every pasing year.

The general trend of the poultry industry to-day would seem to be toward a greater specialization of effort as would naturally be expected with the growing need for more intensive methods. Evidences of such specialization are found in the fancier who breeds solely for show points, the commercial market egg producer, the commercial hatchery and the co-operative organization. his work will continue as the industry grows, and this further divisional development will not only advance the good work already done, but will eliminate many of the evils now existing. The specialized breeding of choice strains of vigorous, heavy producing fowls to supply the market egg producer with new stock of known value, to furnish the hatcheries with eggs of guaranteed breeding quality, and to meet the great demand now existing for mature or nearly mature pullets which are the offspring of vigorous, strong producing parents with trapnest breeding behind them is a new phase of the industry that must develop rapidly. Egg farms devoting all of their attention to the production and selling of eggs and which raise no stock at all, but buy all their pullets from breeders who specialize in breeding strains of heavy egg producing fowls will appear as soon as the supply of pullet stock to meet such needs is to be had. The demand from the suburbanite for new pullets to replace the old hens he has killed off for the table is even now much greater than the supply. The custom or community hatchery, where eggs from a reliable breeding farm having a choice strain of fowls are brought to be hatched and then sold to the various egg producers of the community, or where the eggs of any member of the community may be hatched for him will take the place of the present commercial hatchery. Greater division and specialization of effort resulting in a far greater efficiency in the producing ability of our fowls and in the production, handling and marketing of poultry products, so that they get from the producer to consumer in the best possible condition, with as little loss as possible, and at a reasonable profit to the producer and a fair price to the consumer, and a more widespread appreciation of the necessity for thorough knowledge and experience in the sucessful management of poultry, whether as a side issue or as a specialty, are some of the things that the future will bring to the poultry industry of California.

Soil Treatment For Alfalfa

If each part of every check of alfalfa did as well as the rest, the production would be far more than it is at present. However, very frequently there will be spots in a fairly good field where the growth will be poor. A point well worth noticing is that often the early growth is good all over the field and not until the third and later cuttings is the difference between good and poor spots very strongly noted. There appears strong reasons for believing that the fault in such cases is not due to the richness of the soil, but to the fact that the water cannot penetrate it well.

Through the winter the rainfall has time to sink deeply into soil that will not take water well and supplies sufficient moisture for the first two crops, after which the soil in the poor spots becomes too dry to make much growth. Irrigation water is applied, but on account of the slow way that the water sinks in, not enough goes down to make a full growth of alfalfa. Instead it runs off to surrounding spots, where it can sink in better and they get enough moisture to make a heavy growth. Of course, poor spots in alfalfa may occur from other causes and the correct thing to do is to dig down to find whether the moisture does penetrate or not. Lots of time also only enough water is applied to wet the alfalfa down a foot or so—it seems wet on top, but really is dry beneath. The right idea then is to put on enough to let it penetrate as deep as it should.

Farm Adviser F. F. Lyons of San Joaquin county has been investigating a number of alfalfa spots this summer and has found that very often they are due to the difficulty of water penetrating. As a test he took samples of soil from poor spots and put them in glass tubes, leaving one untreated, others treated with lime, gypsum and other materials. Sometimes the untreated soil would take water for only about two inches and then stop, no matter how long the water stood on it, while those to which gypsum, lime and such materials were applied, took water nicely. These materials have a tendency to open up the soil to enable the moisture to penetrate better. Unfortunately there was not time to test the matter in the field, but this will be done next year as part of the Farm Bureau Demonstrations, and there is only the laboratory tests and the digging of holes in the field to indicate that a big trouble is the lack of moisture.

To substantiate the idea there is also results of adding lime, gypsum and other materials to alfalfa. These free plant food in soils, but they likewise allow water to penetrate better and the frequent good results may be due to the latter more than to the former. Frequently anyway the first two crops, for which moisture may have been penetrating all winter, are up to standard and the later crops are poor, and the adding of lime and gypsum, which makes water penetrate better, causes the yields to increase.

The State Dairy Show at Modesto

By W. M. Carruthers

The State Dairy Show, given by the Stanislaus county Board of Trade and the Modesto Chamber of Commerce, in co-operation with Orchard and Farm, at Modesto, October 15, 16 and 17, proved a success in every way. The Modesto people, especially the merchants, were at first very skeptical about this show and did not rally to its support until it had started. Each day brought more enthusiasm from these merchants and now it is expected that an annual show of this kind will be pulled off every year. There were over 70 head of dairy cattle in the large barn in the center of the city.

The city of Modesto is located in one of the best dairy sections in the State, being the county seat of the county of California producing the most butter. The great irrigation projects which have been operated in the San Joaquin valley for the past few years have worked wonders in the development of the land in the sections where this water could be obtained.

The writer remembers when the town of Waterloo, Iowa, only had 2,500 population when it laid the foundation for a Dairy Show, now national in scope. Kimball's Farmer, which is published in that town, started this good work and helped it

Grand Champion Guernsey Cow, Missie's Boy's Lady of the Fargutts.

along until it is now known as one of the greatest Dairy Shows held in America. Go to Waterloo and talk with the merchants of that city, and they will tell you that it was the Dairy Show which has made it the city that it is. Community breeding has been practiced in the counties around Waterloo for a great number of years, making it a central point where one can go to purchase Guernsey and Holstein cattle.

The National Dairy Show in Chicago was inaugurated three years ago like a bolt out of a clear sky, no one ever imagining that a great Dairy Show could be held in a section that had so long been termed the greatest beef producing country in the United States. To-day the Dairy Show in Chicago is recognized by the merchants as one of the best things Chicago ever took up from a financial standpoint.

At the Dairy Show in Modesto, Professor Gordon H. True, head of the Animal Husbandry Department at the University Farm, Davis, Cal., did all the judging. His work was very satisfactory and the remarks he made telling the people the reason why he tied the ribbon on a certain animal, was very instructive. Placing H. E. Cornwell's Holstein cow over the one shown by J. W. Benoit caused some comment from the different breeders. Professor True said there would have been really no mistake made if the prize had been reversed. The winning cow was dry, the other was fresh; each cow had points superior to the other.

It was rather against the teachings of the State Farm to place a dry cow first, but it is not always practical to abide by this rule. At the National Dairy Show at Chicago two years ago a dry Holstein cow was made Grand Champion of the breed.

These University teachings are all good, and very helpful to the stockmen, nevertheless they are quite often broken by a practical judge.

Grand Champion Jersey Bull, Altama Interest, Winner of Sweepstakes.

The Holstein Show in all was very good. Many good individuals filled the classes, and sometimes the ribbon was hard to tie. The two-year-old Holstein bull owned by G. W. Bashor was a splendid animal. He was finally made champion of the breed. The Holstein cow owned by H. E. Cornwell won the cup for the best cow of any breed at the show.

The Jersey exhibit was even larger than the Holstein. This may be accounted for by the old established Jersey herd of Guy Miller, having for its home, Modesto. One will usually find where a celebrated herd of a certain breed is located, many new herds of this same breed will usually spring up in the same section. This has been the case at Modesto and it was shown during the Dairy Show. The competition was keen, many of the prizes going to new breeders. Guy Miller's herd bull was made champion of the breed and later received the cup for the best bull in the show.

Five counties were represented at the Dairy Show, proving that the interest extended much beyond the Stanislaus county line. E. B. McFarland of San Mateo shipped down a few Ayreshires which seemed to make a hit among the dairymen, and as there was no competition, everything in the way of ribbons went to this herd.

The Strader herd of Dutch Belted were also on exhibition and as they were the only herd, they had no competition. It is too bad there were not more of these cattle on the grounds, as they are very numerous in the section where the show was held.

One of the best prizes given at the Fair was the cup for the best utility herd of five cows of any breed. Three entries were made in this class: One Dutch Belted herd, one Holstein, and one Jersey. This was a hard ribbon to tie, Professor True stating that all three herds were so different in their make-up. The ribbon was finally placed on the Jerseys, owned by Guy Miller of Modesto. Mr. Miller is to be complimented on winning this prize, as he has spent years of time and much money trying to build up this great herd.

An agricultural paper publishing good livestock and farming articles can do a great deal of good in the country where it operates. An agricultural paper which will put into effect in reality the articles which it publishes, can do ten times as much good as the paper which does not. Kimball's Dairyman really made the National Dairy Show at Waterloo, Iowa. The Chicago Livestock World through its futurity classes with draft horses at the different State Fairs, has helped the heavy horse industry in these States where this work has been carried on a great deal; in fact, the Draft Horse Show at the Iowa State Fair has practically been made by the Chicago Livestock World.

Grand Champion Dutch Belted Cow, Princess Eluine.

Cups awarded by "Orchard and Farm" at State Dairy Show, including cup for best bull at show owned in Stanislaus county, won by Guy H. Miller; best cow in show owned in Stanislaus county, won by H. E. Cornwell; the same animals winning cups as Grand Champions in Jersey and Holstein breeds; Grand Champion Holstein bull, won by G. W. Bashor; Grand Champion Jersey cow, won by D. F. Conant; Grand Champion Dutch Belted bull and cow, both won by U. G. Strader; Grand Champion Ayrshire bull, won by E. B. McFarland; Grand Champion Guernsey cow, owned by O. V. Wilson; best utility herd, any breed, owned by Guy H. Miller.

Orchard and Farm can make a great State Dairy Show at Modesto if it will only get behind it. The country from Tracy to Bakersfield is fast becoming a land of small farms which must either be operated in the production of beef, dairy, or hogs along the lines of intensified farming. Fresno and Hanford have their County Fairs, making Modesto the logical point for a State Dairy Show. California has always been called a State of long distances, but good roads and the automobiles have changed this and to-day Modesto can be reached from almost any point in the San Joaquin valley in from three to seven hours.

The people of Modesto ought to realize what a Dairy Show will do for their town. Pick out a live man and set him to work. The State Fair owns some large tents which should be had for the asking. The different dairy breed associations should be consulted in this work, also all the manufacturing associations who are in the business of making machinery to be sold to the dairymen. If such

(Continued on Page Twenty.)

The Dairy Gatherings at Modesto

While the dairy show at Modesto was attracting crowds of visitors, dairymen in particular, the Modesto Auditorium, a block north of the barn where the cattle were being displayed, was the scene of the annual convention of the California Creamery Operators' Association and of the California State Dairymen's Association. Two years ago at Turlock the latter was organized, in a way an offshoot of the creamery organization, which is fundamentally a butter maker's concern, and the two have met simultaneously since then, first at Tulare a year ago, then at Modesto this year.

Since the organization of the Dairymen's Association a Creamery Managers' Association has been formed, which in interest is far closer to the dairymen than an association of buttermakers, though on the skill of buttermakers depends the prices obtained for dairy products and welfare of the dairy interests of the State. Still, a dairyman's programme is of little interest to a buttermaker and a buttermaker's programme is of little interest to a dairyman, and in the future each association will meet separately and there will be no more connection between them than any two associations having different lines of interest in the same great industry.

Reorganize Dairymen.

The time has come likewise for a reorganization of the dairymen of the State. The association existing for the past two years with the help of the creamery operators made the start, it is now up to the dairymen of California to go alone and to get together as they never have before.

Junior Champion Holstein Bull, Merel Hengerveld De Kol.

The old association was formed along lines which apparently did not interest persons engaged in every branch of dairying, largely on account of its connection with the creamery interests. The pure bred dairyman has given all his attention to the breed associations; the man who pulls the teats was not largely represented, and he is the man to have in an association and can be with an organization along right lines.

On every side is commendation for the idea of holding an annual State dairy show at Modesto, the great center of dairying in California, pure bred and commercial, geographically and otherwise. For a strong dairy association there must be some feature to draw the dairymen out—they will not come for a programme alone, and a show is apparently the only thing. The attention of the recent show, largely experimental and local, proved what a great factor in getting dairymen together this was. Get your State dairy show, with paid entrance fee, to make such awards possible as will allow dairymen from elsewhere to take their stock to the show, then you have the dairymen from all over who have the finest stock and live dairymen who wish to see good stock and meet dairymen.

During the day there can be the show. At night the dairymen will be free for the meetings of an association and the livest sort of a programme, and an association can be developed.

The old Dairy Association was built along representative, not individual lines; it was made up of dairy organizations only and with rare exceptions the live dairy organizations, unless it be the breed association, are milk dealers' associations, the leading members of which are often as much interested in creamery work as in dairy work, hence the nature of the old Dairy Association. Now all feel it well to reorganize on an individual membership basis. Given the great opportunity of an annual State Dairy Show, and the combination is more than excellent.

On another page is a leter from S. A. W. Carver, who has been secretary of the old Dairy Association since its organization, suggesting an annual show and indicating the need of a new system of organization. We suggest that each body of dairymen in California, purebred and otherwise, and all individual dairymen, get together as soon as possible and plan for a strong dairy association for the great meeting of dairymen in San Francisco, 1915, holding the same year, perhaps, a dairy show in Modesto for California stock alone, to show visitors what California stock is, and after that a show every year.

The activities of the old Dairy Association have largely related to dairy legislation and in connection with the Modesto meetings, it will be well to say that legislative matters now bid fair to occupy a minor place in the interests of the California dairyman.

The work of the State Dairy Bureau under the secretary, F. W. Andreasen, has been universally commended, both from the standpoint of the individual dairyman and the interests of the daily industry as a whole. As related to dairying in general expert opinion is that the California dairy laws are among the very best of the United States, and while the work of the Dairy Bureau has been growing greatly the last three and four years, the only special need is for more inspectors and more facilities for keeping up with the advance of the dairy industry. There may be a few minor changes in the dairy laws in general, such as time naturally indicates best, but there will be no fundamental changes asked by anybody in the main dairy laws.

The next kind of dairy legislation relates to city milk supply and municipal dairy regulation. The big fight over dairying in the last legislature was based mainly on the troubles arising over too much city legislation, but gradually the two sides are coming to an agreement. Tuberculosis and tuberculin testing was about the biggest single cause of dispute, but there has ben a decided change of viewpoint the last two years regarding compulsory tuberculin testing and extreme views have largely been given up. The fight over tuberculosis is practically over and any legal changes regarding it will be small and unimportant.

Very unfortunately there has been in previous years as a general rule friction betwen the dairymen supplying city milk and the women's organizations, representing the consumer, though this was not always the case. Naturally, when friction developed, the dairymen were extreme in their views as well as the consumers in theirs. One of the very pleasant features of the convention was the indication of the cordial cooperation that is developing between consumer and the producer, as shown in the excellent address of Mrs. A. E. Graupner of San Francisco. The fundamentals in the consumer's viewpoint and that of the dairymen were seen to be practically the same and the differences were all trivial. We can look for better conditions in the future than in the past in legislation.

San Francisco 1915.

The next meetings will be in San Francisco at the Panama-Pacific International Exposition. Officers of the Creamery Operators' Association were chosen largely with this in view. W. H. Roussel of San Francisco was elected president; Fred Daniels of Alameda, vice president; Leon Davis of the University Farm School, secretary; John Sollie of Eureka, Lowell Gum of Modesto and E. B. Stowe of Stockton, executive committee.

As was stated before, it seems probable that some steps will be taken to reorganize the Dairymen's Association. Until that is done the former officers will hold office, J. W. Guiberson of Corcoran being president and

(Continued on Page Twenty.)

To Gordon H. True, Professor of Animal Husbandry of the University of California, "Orchard and Farm" offers its sincere and hearty thanks for his services in placing the awards at the State Dairy Show held at Modesto. In this the exhibitors of stock and visitors who came to see the animals on display, and all others participating in any way in the show, most heartily participate. The illustration shows Professor True as he was judging the utility herds.

Grand Champion Jersey Cow, Victor's Lady Dolly.

Grand Champion Holstein Cow, Hermana Ciruela Mechthilde, Winner of Sweepstakes.

The Results of Co-Operative Buying

(In the October issue some of the early history of the Ukiah Farmers' Club, Inc., was given and a partial description of its organization and methods. The following carries on the tale of this very interesting and successful organization of farmers, which apparently has solved the great problem of the purchase of those things which farmers use at moderate prices.—Editor.)

On July 1, 1912, Secretary and Manager Bernhard moved into half of a warehouse by the railroad near the Northwestern station. He had his own typewriter, a plain kitchen table for a desk and three or four kitchen chairs for equipment. For capital there was the $2 membership fee, for business the practice of some members of ordering goods when they wanted them and leaving the money to cover payment.

There were two things that could be made to help business. One was the Poultry Association, the other two Lake county bean canneries which used the warehouse to store the beans before shipping. The poultrymen had gotten into the habit of having their cars of feed unloaded into the warehouse and coming for the goods there instead of to the car direct. They were also doing a business of a car of feed a month. Mr. Bernhard figured that as part of association business he could order the feed ahead of demand and the poultrymen would have gotten the feed all from him within 30 days, or before it was necessary to pay for it, so he took over the feed business for the Poultry Association, the members all being members of the Farmers' Club By that time the reduced express rate on eggs was effective and pooled shipments were no longer necessary, so the poultrymen had no more trouble either buying feed or selling eggs.

The bean canneries also did enough business at the warehouse to cover the wages of a warehouse man for two months, so Mr. Bernhard for the association took over that business and hired a warehouse helper, figuring that in two months enough other business would have developed to keep things going, as it did. The association still handles the warehouse business for the canneries, and does other warehouse business also. In course of time it expanded to take in all the warehouse, extended the structure and built a large and modern wing. This is but an incident to the buying business of the organization, which is the greatest feature of all.

For a number of months after beginning business, buying was done on the simple plan of having the member bring in the cash for what he wanted and the secretary would send to some city wholesaler for them, provided the wholesaler would agree to trade with the club, as some would not. This was a method that did not permit a very great expansion. One thing it did do was to develop the idea that prompt payments were an essential in doing business with the club, which is the foundation for the whole success.

Borrowing Money.

By the fall some of the members began to wake up to the fact that the club was getting to be a big affair and they knew enough about business to know that money was a necessity, so volunteered to lend the club some money on interest. This permitted an expansion and gradually it became possible to order goods in advance of orders from members. Thus a farmer who wanted something could come to the warehouse with the expectation of finding what was wanted. Likewise the old plan of getting anything a member asked for was kept up, till it became a saying, "If you can't get what you want, go to the Farmers' Club and they will get it for you." The club handles lots of things. It don't carry pianos in stock, nor flying machines, but will order either one when a member so requests.

The way that members advance money to serve instead of capital is shown by the purchase of the warehouse and its site. In the spring of 1913 it was seen that the lease might not be renewed and that the club might have to buy the property outright or move. Mr. Bernhard went to the owner and was given a verbal option on the property for $10,000.

The club was utterly without capital, but Mr. Bernhard got the promis of 50 or so members to lend $100 each for ten years at 6 per cent interest. Some could not come through, but half the money was raised that way, which half paid for the property. These notes were unsecured, but members thought they could afford to risk that amount for a good cause. Then with half the money on hand, making the property a good mortgage risk, the rest of the money was borrowed from one of the local banks and the club owned the property. That is an illustration of the way the club gets along without capital for permanent equipment. The fact that merchandise can be purchased on 30 to 60 days' time and that the stock kept on hand is very small makes very little capital sufficient for a large merchandise business.

There is also several thousand dollars in notes from the club outstanding all the time, all the money being borrowed from the members, none from banks or outsiders, though the club does business with the banks as does any good business organization. This money is borrowed at 8 per cent which is twice savings bank interest. The notes are made payable 30 days after demand, but not once has the right to wait 30 days been asked for. Thus the club serves not only to get goods (and sell goods) at cost, but it acts also as a method of investing money.

Saving Both Ways.

In the future much of the farm produce may be sold through the Farmers' Club, which will have to expand to several times its present size if it is going to do all that it is being asked to do. At present not much but grain and eggs is regularly sold for the members, and the eggs are mostly those of farmers with so few hens that they cannot well ship the eggs themselves. For the eggs three cents less than San Francisco quotation is given.

When it comes to the selling of grain for members money is made going and coming—for the producer and for the consumer. Grain production about equals consumption. Before the club got busy prices were based on San Francisco quotation. The producer got quotation, less freight and margin for trade, about $1.55 per 100 in the old days. The consumer, wanting wheat for his fowls, paid the retailer city quotation, plus freight, plus retailer's profit, or about $2.25 for the same wheat. The same thing was worked with barley and other cereals. The club did not buy grain from the producer, but sold it to ultimate consumer at 5 per cent commission. The first year it was tried the producer got not less than $1.65 for wheat turned in, members purchasing same paid not more than $1.75, a saving of 50 cents a hundred to the consumer as compared with old retail price, and a profit of 10 cents a hundred to the producer. May thus end all our high cost of living! This year the demand has been greater than the supply, necessitating the purchase of some feed elsewhere and making a higher price for some of the grain for the consumer. On August 1, 1914, the producer was getting $1.70 and the consumer paying $1.80, everybody having reason for feeling happy.

Scope of the Trade.

The club still does business in the warehouse with no frills or fancies of ordinary retail trade. As the demand for any kind of material grew a larger stock was carried and goods ordered in advance of demand. Nothing has been carried and no class of business started unless a big call for those goods developed by the members.

For some time groceries were ordered by the case only and no broken packages sold, until the business became so great that it was necessary to hire a special grocery clerk. As soon as this was done goods were sold at retail in any amounts and ordered ahead of time. The only goods ordered, however, are those for which members are in the habit of calling, the stock is small, the business large. The club has grown to include more than 250 persons, all farmers, some living 60 miles distant, and all buying most of the things they need through the club.

In the one line of bolts a big business is done. They used to cost retail 5 cents each or two for a nickle. Farmers always need bolts, but the cost of one or two at a time seems insignificant. Early in the game Mr. Bernhard built a redwood case to contain bolts of all sizes. He told members they could go in and select 100 for $1 provided they did not take more than 10 of one of the larger sizes. In proportion to the importance of the thing the club does a bigger business in bolts than any other one kind of goods and makes three times regular profit at that.

It has gone into the hardware business, hardware being something with an enormous difference between wholesale and retail price. It secured the agency for a leading make of gas engine, and although the margin there is moderate, there is yet a good saving to the consumer by the direct dealing. The member can come in and get wire and electrical apparatus to wire his house, or plumbing material to give him hot and cold water and all modern plumbing conveniences.

It has attracted the housewife with washing machines and other labor-saving apparatus connected up with electric motors or gas engine for demonstration purposes, and so on in this line of goods and that line.

Building paper is bought direct from the manufacturer at much less than wholesaler's price and a bigger business in automobile tires is done than by any garage in town.

Hop growers and fruit men have been getting interested in fertilization and the club has taken the agency for one of the large fertilizer companies, with the result that the use of the fertilizer has advanced enormously. This is due, not especially to any saving in costs, which is a minor feature, but to a feeling, perhaps, that they are buying from their own concern and surely getting just the best combination for their needs, a good deal also to the trials of fertilizer in previous years and a recognition of its advantages.

Then take the matter of insurance. There is talk of farmer's mutual insurance companies, but the system here is next best, if not better, especially since no capital is required. Mr. Bernhard personally was made agent for four fire insurance companies, rules preventing the appointment of the club as agent, but he acts simply for the club, which gets the regular agents' commission. Policy holders get regular rates only, but the commission goes into the club treasury to add to working capital, or to pay operating expenses. A far larger insurance business is done, on account of the number of hop driers in operation over the district that would be the case in most districts, and the income to the club on the insurance business last year was more than $600. It will be even more this year.

The Lumber Yard.

The biggest feature of the club at present is the lumber yard, started about five months ago. No. 2 redwood cost the dealer $14 per thousand delivered on the cars at Ukiah. There were two yards in town and prices were $24 and then $26. Members who wanted a lot of poles for their hop yards got desperate and wanted the club to buy lumber for them direct, as it bought other things, but there was nothing doing—the mills would sell only to regular lumber dealers. Finally, at a meeting of all the members, it was unanimously voted to go ahead and establish a lumber yard, and arrangement were made with several of the members to borrow what money was necessary, a good deal of money being required and the club having capital to draw upon.

Even after deciding to start a yard there was trouble getting the lumber, and the club had to agree to take and pay for 150,000 feet of lumber at the start in order to get dealers' prices, but within four months after starting the yard 600,000 feet of lumber had been sold. Instead of $24 to $26 per thousand, the latter being the price ruling before the club started, lumber is sold at $20 per thousand, leaving a good margin for expense and profit. The saving of $6 per 1,000 feet has meant $3,600 to the community, plus whatever profit above expenses is made by the club.

A lot adjoining the warehouse was purchased for $800 for use as a lumber yard and a planing mill is being erected upon it. This lumber business is entirely in addition to the $12,000 worth of business done by the club in August and told of before.

Effect of the Work.

It is not only the amount of business done through the club and the saving in price that counts, but the effect of the life of the members and on agriculture. It naturally has developed a public spirit in the members and a spirit of progress in the feeling that they were doing something worth while. Every year a Ukiah Farmers' Club picnic is held, which is the event of the year in Mendocino county.

The money that has been saved and the fair prices for which all material can be obtained has puts lots of farm and home improvements on farms that otherwise would have been in a rut. A farmer has a certain amount of money he can spend. If he uses it up on bare necessities, he can do little for improvements. If his groceries, sacks, feed and other necessities cost less than usual, he can buy tools that he otherwise would be without, especially when those tools cost less than usual, and that is what has happened around Ukiah. There has been money to buy hog and cattle-proof fences, with a consequent saving in time and expense in patching up the rail fences. There has been money for better farming tools; for a new coat of paint for the house; pipe and

(Continued on Page Thirty-three.)

Rice Growing in the Sacramento Valley

By the Editor.

Within five years' time the greatest product of the Sacramento Valley will be rice, if the financial and cultural results being secured at the present time and the progress of the last two years are any indication. This year there were 16,000 or 17,000 acres grown and harvested and there is a vast amount of land just as good that can be used for this crop. Probably there will be 200,000 acres in rice in the valley before the rice area is fairly well utilized and it is hard to say how much land will be finally planted. The acreage this year, when rice culture is only just commercially established in California, is of itself an indication of future greatness. Nothing but large profits could cause such rapid development.

The center of rice culture in the Sacramento Valley to-day is in the vicinity of Biggs and Gridley, in Butte county, but it can spread all over the northern Sacramento valley where soil is suitable and moisture available. Through the San Joaquin valley, except perhaps in the northern part, the climate is thoroughly satisfactory for it, though it is doubtful what acreage can finally be utilized in the San Joaquin on account of the heavy moisture demands of the crop.

A long, hot summer is first necessary for good growing conditions. Then there must be lots of water, as water must stand on the land for most of the time that the rice is growing, 90 days or more. To hold this water and to prevent it from sinking down and being lost by seepage, it is necessary to have a hardpan or some tight subsoil. The low-lying lands of the upper Sacramento, often adobe, or resembling it in texture, and underlaid by an impervious clay provide just what is wanted in the way of soil and much water can be secured from the Sacramento river and its tributaries.

Appearance of Fields.

As one goes through the rice country just before harvest he sees rice fields extending out far on every side, the long, willowy heads of rice bending over with the weight of grain to make a flat, level floor of green which yet contains the yellowness of harvest time, suggesting the richness of a land literally covered by grain. Running through the fields in straight or curved lines can be distinguished the location of the levees, with the different height and color of the rice there. Here and there perhaps is a spot where the rice did not make a stand and where water is standing over the clean, black soil, for no other vegetation than tule or water grass can come up in a rice field. Occasionally a few blades of dark-green tule stand up, and around the edges of the fields or on ditch banks there is some water grass.

By the roadsides or where the water has overflowed from the fields water is standing, but where the land surface is a little higher than the normal level, say on the roadways, the soil is hard and level, like that of California adobe in summer. Although there is water, water everywhere, as might seem natural in the Oriental tropics, yet the impression still holds that one is in the land of long, hot, rainless summers, and by the sides of the rice fields, covered three months with water, can be seen cornfields close to a farm house, or toward the borders of the rice districts there will be the peach orchards and alfalfa fields to which standing water would be ruination and death. Where water is needed water stands; close by, where water could not be, crops that cannot endure wet feet thrive and prosper.

The Colusa Country.

Not all the good rice land is adobe and clay hardpan by any means. There are 3,000 acres owned by the Moulton Irrigated Lands Company a few miles from Colusa in Colusa county that is river sediment of the kind sought for prunes and alfalfa, which are used for rice with the greatest success and applications are in for the rent of 7,000 acres more. The soil in these rice fields is a heavy loam of about the same texture many feet down. It fills up after the water is turned on until it is saturated down to permanent water level and as there are no sand or gravel streaks, it might as well have a cement bottom as far as loss of water by seepage is concerned. This shows that there is lots of land besides adobe that is thoroughly adapted to rice.

There are varieties innumerable of rice and the first few years they had to be tested to eliminate the unsuitable and find those best adapted to conditions. Now three varieties are grown, selected for the length of season, since by having them mature at different times the same machinery and the same crew can attend to a larger acreage than if only one variety were grown. The quickest maturing rice is an Italian variety; next, two Japanese varieties, the Ioko and Wateribune, the latter having the longest season and being of the best quality. As is to be expected, the variety with the longest season is one of the finest quality and the most productive, the quickest maturing being of less value and productivity.

Planting Time.

Rice is a plant of warm countries and is best planted in April. As it is impossible to plant a big acreage all at once, some gets in in May and matures late, and also produces less than early sown rice, so top yield cannot always be secured. Including poor plantings for time and otherwise, the average production is about 40 to 45 sacks per acre. Very good normal yields are 60 to 70 sacks per acre. The Moulton Company, trying for an ideal, have averaged 110 sacks to the acre from 10 acres, but 60 sacks of 100 pounds each is a pretty high mark to figure on for the best fields and the average would run much below this.

The cost of production, W. K. Brown, manager of the Moulton Company, states to be $35 per acre. The rice as it comes from the thresher is worth about $2.35 per hundred. You can figure out the relation between cost and income

Most rice land is very level, but before planting it has to be checked up. The water stands several inches in the check continuously from the time it is six inches high until near the time of harvesting. On the Moulton ranch the cost of checking has been 70 cents per acre with tractors and 95 cents with horses. In a season five acre feet of water are used, or enough water to cover each acre in rice five feet deep. The cost of this water is just five dollars, or one dollar per acre foot, owing to availibility of the water and small lift. This water is taken from the Sacramento river close to the rich fields, the lift being four to ten feet, according to the stage of the river. To convey it over the land 132 miles of canals are used for the 3,000 acres of rice and a lot of land farmed to other crops. A 30-inch and 24-inch centrifugal pump are used, with 150 and 100 horsepower motors.

Cultural Methods.

In spring the land is prepared for planting in the same way that it would be for barley and the rice sowed as barley would be, either broadcasted or drilled in. On account of being waterlogged for all of a previous summer, all weed seeds are killed and the rice comes up clean. When about six inches high the water is turned on and kept standing until the grain is in the dough, at which time the water is taken off and the land given a chance to dry out so that the horses can get on it with the reapers. The straw all this time remains green and soft. The result is that after threshing the straw is fine and palatable and makes an excellent hay, much superior to ordinary grain straw and about as good as grain hay.

Rice grows about 24 or 30 inches high and a good field is as level as a floor on top and when the field dries off the ground is absolutely clean of weeds. The rice itself grows in bunches, with clean ground between. It is cut about eight or ten inches up. The stubble is left green and if the weather is warm new shoots may come up, the whole thing making fine pasture for the stock. The straw as it comes from the binder is so green and soft that it has to be put in small piles and left to cure for a week or ten days before it is fit to thresh. An interesting thing about it is that it can stay out exposed to the weather without injury. It can even be covered with water without spoiling. That is the result of being a water grown plant. If the weather becomes moist and warm both, however, the rice close to the ground will sprout and spoil, something very unlikely to occur. If the ground is too wet to cut it, at the proper time it will shatter, but if cut at the right time it can remain through all kinds of weather before threshing.

The reapers and binders are made especially for rice. Originally the machinery was operated by the traction of the wheels, but the reapers now are operated with small gas engines and the horses and mules have only the work of drawing the outfit along. Three or four animals are used.

Manifold Uses.

After threshing the straw is fine, soft and very palatable and makes very good hay, almost as good as grain hay and far better than grain straw. The screenings make fine chicken or stock feed. The stubble is green and makes fine pasture if weather permits the stock to get on it. The grain goes from threshing machine to mill, where hulls are removed, being of small account.

In the Orient the whole grain is used, but unfortunately the American demand is for polished rice, which calls for the removal of the nutritious outer coatings. This results in having a number of especially fine milled products, including two brans, much superior to wheat bran and an excellent flour. There also are some cracked kernels which sometimes are used for poultry or stock food, and the best of them for brewing, the purity of the starch making them useful in clearing beer. Breweries which make a specialty of clear beers use large amounts of this.

Rice is the main article of diet of, it is said, half the human race, and California is getting an extremely large acre production of very high quality rice. The only weeds are tule and water grass, which give no trouble at any stage of the proceedings. The stubble makes fine pasture, the straw fine hay, and after the finished product is secured from the mills, there is left milled products of the highest value. We are to have in California in a few years many ten thousands of acres of rice, which will be one of the biggest and best crops of the State.

DECIDUOUS PRUNING.

To Orchard and Farm: The fundamental principles of citrus pruning may well be applied to any tree or trees; deciduous fruit, nut trees, shade and ornamental trees, although in detail there is a vast difference in methods.

In starting the young tree care should be taken to have the main branches or leaders placed a sufficient distance apart so there will be no interference later. This should be attended to during the first season following planting. A tree should be started off in this manner regardless of kind or variety and it will develop more rapidly and come into bearing more quickly and give far less trouble in the years to come than will a poorly shaped tree and there will be no occasion for the cutting out of any large limbs or branches. In all parts of California where deciduous fruits are grown extensively there seems to be a well established system of pruning and if followed closely and faithfully, all other conditions being favorable, satisfactory results may be depended on and the grower will rarely meet with disappointment either in quantity or quality of crops of marketable products.

As the climatic conditions in the Golden State tend to produce a heavier wood growth than any other State in the United States, this fact calls for a more thorough and constant pruning in order to maintain a high standard of fruit, while, on the other hand, if the trees are allowed to go for one or two years with no application of pruning tools, the fruit will show a falling off in quality, although increased in quantity.—A. A. JENKINS, Porterville, Cal.

BULLETIN ON KAFIR.

The Kansas State Agricultural College at Manhattan has issued a bulletin on "Kafir in Field and Feed Lot," which, though applying strictly to kafir, contains much of interest to growers of the other grain sorghums. As indicating the standing of this crop it can be said that in the western half of Kansas during the last 15 years kafir has returned an average value of practically twice that of corn per acre. The values approach as one goes toward the northeastern part of the State into more of the Indian corn country, but only in the northeastern corner of the State, and in the rich river and creek bottom lands in other parts of the State is Indian corn more profitable than kafir, a fact worth noting in California, not a natural corn State. It is highly spoken of as a crop for the silo.

The bulletin states:

"In pasturing kafir, the stockman must be careful that he does not incur loss by prussic acid poisoning. Kafir, as well as other sorghums, sometimes contains this acid, and when eaten by stock it is a quick and deadly poison. This acid is most apt to be present after a period of drouthy weather or after the kafir growth has been checked or stunted in some manner. Even though kafir contains the acid when cut, it seems to be harmless when the crop is thoroughly cured; and up to the present time there has never been a case of prussic acid poisoning from kafir or sorghum fed as silage."

How a County Farm Adviser Works

By the Editor

There are few subjects in California agriculture that are arousing more attention than the plans for county farm advisers and there are few things that open wider possibilities. A number of counties already have such advisers and others are planning to get men when they will be available. The thing that is worth while is to know just what a county farm adviser does. There are University of California circulars discussing the subject, but to get a definite description of what is being done in some one instance we visited San Joaquin county recently and spent several days with F. F. Lyons, the farm adviser of that county. Each county has its own problems and each man has his own way of doing things, but the method of working is in general aspects about the same one county as another.

The farm adviser is not simply a man set down in a county to go ahead and advise farmers on scientific agriculture, but he comes to a county with the machinery for working with the farmers already in operation. The farm adviser is appointed only after the county has shown that it wants him and has gone to the trouble of organizing to get him. After organizing to get him, the organization naturally is ready for him to work with. This adviser, sometimes called a county agent, must be a graduate of an agricultural college and in addition must have had at least two years agricultural experience outside of college.

There is in San Joaquin county a Farm Bureau, which was organized by farmers before the adviser was appointed, and the adviser works in harmony with this. The bureau is composed of the farmers belonging to Farm Centers, formed in different parts of the county, each Center having a director. The directors of the different centers, who manage the bureau, meet at stated times with the adviser, who discusses the various kinds of work with them. There is also an annual meeting of all the members of the centers, at which an election of officers is held and a live programme arranged. The Farm Centers are, however, the active parts of the system and a little description will show how they fit into the system.

The Farm Centers.

In San Joaquin county there are 13 Farm Centers, located in the leading sections of the county. All farmers interested in the proposition are eligible to membership and it is through them that practically all the personal work of the adviser is done. Once a month a meeting is held at each of these centers, perhaps in a school house, perhaps in the hall of some small settlement, or in some such place.

At these meetings some matters of importance is taken up and usually some speaker engaged from the university or elsewhere. In places where there is a good deal of alkali—lkali has been the topic once or oftener—almonds is a topic in an almond section; humus, plowing, or fertilization, topics at other times. Each center takes up all kinds of subjects which are of interest in the district.

There is a secretary of each center, also a director, who represents the center in the Farm Bureau. When it comes to personal work on individual farms the director is the one through whom the adviser finds out what is wanted or to be done. At every Farm Center the adviser spends one or two days a month, at the time of the meeting. Before his visit to a district any member of the center who wishes to see him about a farm problem leaves word with the director, and the director tells the adviser, who then makes the rounds of those who wish to see him. Thus, by having these organizations, some definite person to communicate with, and a definite time of visiting a community, it is possible to visit many farms and investigate many farm problems.

One man, for example, may wish to try some lime on his soil and wishes to know what is the best kind to use, where he can buy it to best advantage and how to go about the job, and the adviser hunts up this information for him; another is going to plant a cover crop and wishes advice as to the best kind and way to plant; a third wonders whether it would be a good plan to prune his almond trees to increase their vigor and productivity; another wants to build a barn and wonders if there are any new ideas about design or location; others have sick trees and don't know what is the matter, or have insect troubles or diseases for which they want to know the treatment. And thus it goes. They all know that the adviser will be around at a certain time each month, that all they have to do is to leave word at the director's house and if he don't know what they want to know, and nobody yet is an authority on every subject, he can find out for them. The work is such that when an adviser has been on the job for some time and looked up everything put up to him, he has a lot of information that is worth a great deal. A man whose special work it is to investigate all sorts of agricultural subjects and who is continually visiting farms to discuss and help work out good farm methods can naturally do lots of good.

Farm Demonstrations.

The work described is only a small part of what an adviser is to do, and the part of least importance. The really big thing is the farm demonstrations. Mr. Lyons has only been in the position four months, coming too late in the season to organize any demonstrations, but a large number will be undertaken, beginning this winter and next spring. The real aim of the adviser is to bring actual scientific discoveries to the farm and the demonstration is the way to do this.

For example, this spring a certain member of the Acampo Center, on his own initiative and before the center was thought of, applied some lime to his Tokay vineyard, plowed deeper than usual and much later, getting by this means a heavy weed growth into the soil. There were excellent results and, although it was not a Farm Center demonstration, it was just the kind of a thing that is wanted. Now others have ordered some lime and they will try it, handling part of the land in the old way. Then they will have each other's results to compare with, and will know that everything was done according to actual farm practice, which will have far more effect with them than results secured on an experiment conducted by a university professor. Then the thing will be in plain sight, and once doing is worth a hundred times seeing, just as once seeing is worth a hundred times telling. In Humboldt and other counties, where experiments have been under way for some time, it is customary to have signs up stating that "Farm demonstrations are being conducted here," so that the effects of the demonstration can be seen by everybody.

Then there are lots of other experiments, like subsoiling one part of an orchard or grain field and plowing in the old way elsewhere, or perhaps only plowing deeper, or having several members of a center—the more the merrier—each take half a dozen almond trees and prune them heavily, say like an apricot, or having several of them try some fertilization, or feed their hogs differently, or do this, that or the other thing concerning which they are not certain, to see which way is best. The fact that several persons undertake an experiment always makes it more interesting, and the results more certain. They can talk over their work and follow the farm practice that they find best

Everybody can think of a number of ways of doing of which he is not certain that he has the best way and there is room for a good demonstration in each case. The idea, however, is not to do this for experiment, but for demonstration. The farm adviser by his study and by keeping in close touch with modern agriculture is supposed to see that unnecessary things are not tried, and to have the demonstrations those which will bring good results.

A Farm Exchange.

One thing started by Mr. Lyons is a Farmers' Exchange, for the benefit of those who wish to buy or sell stock, tools, or some such things. There is a big demand for pigs, a bigger demand than there is a supply, and farmers may write in saying that they want to buy some pigs, or perhaps a pure bred boar, or a sow, or whatever it is, and someone else perhaps has some that he can sell, so when his application comes in, word is sent to him of people who wish to buy. The same in farm horses, dairy cattle and other stock. A number of dairymen, for instance, had good dairy bulls which they could not use, owing to their heifers growing up and yet thought they were too good to sell to the butcher. Buyers have been found through the exchange, thus keeping fine sires in service. Other farmers have plows or cultivators to sell, or tools of various kinds, or perhaps some seed. Whenever a card comes in wanting a sale, the list is looked over of those who want to buy, so that the two are brought together at once. This was started only recently, but has proved very satisfactory.

One of the greatest of the new influences started to aid modern agriculture is the Boys and Girls' Agricultural Clubs, run in connection with schools throughout the country. These clubs are formed mainly through the university, but in counties with farm advisers the adviser can be a great help in their proper management. One such club was formed in San Joaquin county, at Lodi, the boys having great success growing tomatoes.

In all such public movements relating to agriculture, the adviser lends his aid, in addition to the detailed work with the centers, by meetings, personal visits and demonstrations. It is his duty to see that things are done which should be done, though now left undone because people overlook them, or because what is everybody's duty is nobody's duty. In those conditions it is his duty to see that what ought to be done is done, and the Farm Bureau and the Farm Centers that make it up, provide the machinery to aid in public and private agricultural improvement.

Some hints of what is being done in the county may perhaps be discovered in other columns if one looks close. We couldn't tell all of it in this short space.

The report of Horticultural Commissioner F. W. Waite of Imperial county shows that there were imported into the Imperial valley in the year ending September 30, 1914, 6,859 apricot trees, 1,284 orange trees, 8,892 olive trees, 2,536 peach trees, 2,869 pear trees, 5,156 grapefruit, 179,457 ornamentals, 3,485 grapevines and minor quantities of a number of other fruit trees. Commissioner Waite is pursuing active work against weeds and has very good prospects of freeing the county of Johnson grass. Some of the best work against this is being done with a preparation called Dinamine. Wild morning glory is also being kept down and there are good prospects that it will be prevented from becoming serious.

The Farm and the Home

When all is said and done one of the greatest reasons for the farm is the benefits to home and family, as was so well outlined by Dean Hunt of the California College of Agriculture in our October issue. The thought finds response among our readers, and in one of the letters received the subject is developed still further:

"A man employed in big city business has no security for the future if he attempts to rear a family. There is no room for his children in the economy of things in big business, and this is the real important thing to be considered. While a man who owns a strip of the earth's surface can rear a large family, and in place of the children being an expense they can do the work on the farm and thus make it a self-supporting industry. They can compete with the unskilled immigrant from Europe, the slant-eyed coolie from Asia or the devil himself.

"When all is said and done there is no real object in a man accumulating wealth, or taking an interest in his country's future unless he expects to have children of his own to continue his efforts in the future. This was the beginning of man's ambition and it will be the ending. Any race who forgets this will speedily perish. I was forcefully impressed with this thought when I stood at Stanford's tomb—a great expensive pile that holds the end of all his race and kin. It would have been better for him if he had lost all of his vast wealth (and he probably thought so himself) if he could only have left behind some children of his own flesh and blood to dance around on the green outside of that sunless tomb. A little light, and air, and sunshine and life are worth more than all the wealth in the world. Of course he may have been content to leave this duty of procreation to others; but suppose a majority of the others—the original stock of this country—do the same (which seems to be the case), who will be educated in his institution? The descendants of the slant-eyed Asiatic coolie who now so industriously works the farm.

"This brings us back to the beginning. The farmer can make very little money by working the soil, certainly not enough to build great railroad systems, exploit big business and endow huge institutions of learning; but he can rear a family with greater security that his children will be able to endure and reproduce their kind in the future than any other class of inhabitants on earth. The soil has a living stored up for the young human the same as the hive for the larvae bee. And if our race of mankind continues to own the land in this country the United States will have a permanent and glorious future."—G. D. CUMMINGS, Los Altos.

California Fruit and the Canal

[Temporary conditions have rather blinded Californians to the opening of the Panama Canal, to which they have been looking forward for ten years, and naturally also the tying up of the world's merchant marine has nullified the effect of the canal and will until things settle down again. Then the benefits of the canal will really begin to be great and they will be felt. Upon nothing will they have more influence than upon the fruit interests of California, canned and dried, and also upon our apples and citrus fruits shipped fresh.

In order that the fruit men of California might know what to expect from the opening of the canal, we asked Charles H. Bentley of the California Fruit Canners' Association to tell of the expected influence of the canal upon California canned fruits and have received from him the following letter.—Editor.]

More Ocean Shipments.

The opening of the Panama Canal and the immediate lowering of the freight rate on canned fruits and vegetables to points on the Atlantic seaboard as well as in the Gulf of Mexico have naturally stimulated the movement of these articles over water routes. It should be remembered, however, that for some years prior to the opening of the canal the various steamship lines connecting with the Tehuantepec Railway, as well as with the Panama Railway across the isthmus, have given good service and favorable rates of freight to such an extent that so far as the Atlantic seaboard business is concerned nearly all of it has gone by sea rather than by rail, owing to the lower rates named. [Even so, canal rates are much lower and permit much less handling of goods.—Editor.] The railroads continued to enjoy the business to points in eastern territory, but west of the seaboard, as the steamer rate of freight with the locals added, offered no particular inducement to jobbers in points like Pittsburg, Wheeling, Cleveland, Harrisurg, Buffalo, Rochester, etc.

With the opening of the canal and the still further reduction in freight, we find a considerable stimulus is given to the business, owing to the fact that the jobbers in the interior, and even in points farther west than those cities above named, are now wanting shipments via the canal, and a more recent development has been the publication of a rate to New Orleans which has not enjoyed any rate on our lines for shipment by sea for some time.

Local Rates Added.

It should be remembered, of course, that in order to avail themselves of the water transportation, local freights from the interior of California on most of the canned fruits and vegetables must be paid, so that when these rates are added to the sea rate and the marine insurance and the locals back from the seaboard to interior towns, there is not so much inducement to the buyers of goods as there is and has been to buyers on the seaboard. Nevertheless the increase is notable, and there will undoubtedly be further developments along the same lines as transportation opportunities increase to these ports on the Gulf, as well as on the Atlantic seaboard.

More British Trade.

The opening of the canal has a direct bearing on the shipments to Great Britain, although it is difficult to tell this season just how far-reaching that effect will be on account of the extraordinary conditions arising out of the war. When the Californian canned fruits were sold this spring for shipment to Great Britain it was not expected that the canal would be open, and the freight rates were not made so low as will probably be made in later years. The saving of time will be an important consideration, as importers will be able to get monthly shipments throughout the year instead of anticipating their requirements as they have been accustomed to do in the past.

Tariffs Need Change.

Owing to the fact that Great Britain has a comparatively low tariff on our lines, the shipments are relatively heavy. The sales during the current season amounted to approximately 1,200,000 cases of Californian canned fruits. The export movement of Californian canned fruits, however, is almost confined to Great Britain, as it is practically the only great commercial country that does not have a hostile, if not prohibitive, tariff against our lines. This applies to all the Central and South American countries as well as the countries of Europe, and while many of these tariffs were adopted in retaliation for tariffs set against their goods in this country, the recent reduction of our own tariffs here has not thus far resulted in any corresponding reduction on American goods, at least so far as canned foods are concerned. Some foreign countries, like France and Canada, exact a heavier tariff on our canned foods than they do on canned foods imported from other countries, presumably in retaliation for some tariff legislation in this country. It is a lamentable fact that the present tariff does not provide a maximum and minimum scale so as to give our Department of State an opportunity to negotiate for reductions in tariffs of foreign countries.

[Whether a person believes in a high tariff or a low tariff, and the public sentiment is probably more in favor of a rather low tariff than it was fifteen years ago, there can be no doubt in any thinking person's mind that a change in our tariff laws by which we could prevent such injurious discrimination against our goods would help things along immensely.

In our next issue we expect to have an article by some authority on the subject "On the Canal and the Dried Fruit Business," a more important subject than the one discussed in the above letter.—Editor.]

TIME FOR PRUNING VINES.

The viticultural department of the University of California has secured interesting results on the effects of time on the pruning of vines as it relates to frost injury in spring and the consequent size of crops. It has been found that pruning at different times affects the time of starting growth in the spring, the late starting growth naturally being most likely to avoid frost injury.

The earliest vines start in spring were those that were pruned when most dormant. Pruning before the leaves fall in autumn delayed the starting of buds only slightly. Late pruning, after the terminal buds had started in spring delayed the starting of the buds near the base of the canes. Pruning as late as March 13 saved the crop from a frost occurring on April 21. Whitewashing the vines after pruning delayed the starting slightly.

Pruning as related to blossoming showed two things. Late pruning, after starting of buds, delayed blossoming. When early pruning resulted in frost injury, the late pruned vines blossomed first.

As affecting the crop, frost injury in spring diminished the crop of early pruned vines. The average crop of early pruned vines at Davis was 13.44 lbs., of late pruned vines, 18.64 lbs. Pruning after the terminal buds had started seemed to increase the crop irrespective of frost injury, the crop on vines pruned March 14, averaging 17.72 lbs. per vine, and of vines pruned April 14, 22.55 lbs., but pruning after the shoots had grown several inches made a big decrease in yield. Late pruning also delayed the time of ripening, late pruned vines giving grapes with much less sugar at time of harvesting, though the grapes with less sugar would have ripened up more if left on the vines. Late pruned vines also gave grapes of inferior quality, by late pruning in this case being meant pruning delayed too long. Apparently as late pruning as can be done without reducing the yield, that is, when terminal buds are just about to start, is good for the yield and good as a method of running less risk of frost injury.

It's not the lack of hands, it's the lack of brains that keeps this old earth grumbling along in the ruts of poverty and tradition.

It is never too late to begin better farming practices, although they may prove rather costly if long delayed.

Miles of Economy

Miles of Comfort

Miles of Security

Multiplied Mileage

MILEAGE—all kinds of mileage, without sacrifices—that is the key to Firestone leadership.

Miles of Economy—because of the Firestone endurance—which means length of tire-life, freedom from repairs, most car protection.

Miles of Comfort—because of Firestone extra quality and extra quantity of rubber—full of life and "give" and easy riding.

Miles of Security—with Firestone Non-Skids—because of the massive letters right angled against skid in any direction.

Sent Free on Request

Write us the name and address of your dealer and the make of tires you use and we will send you, free, a fine waterproof and oil proof Tube Bag. It will keep your Inner Tubes fresh and dry. Every car-owner needs one. Also get our valuable free book on care and selection of tires. Your dealer has Firestone Tires and Tubes, or can get them for you promptly. We will have them sent to you if necessary. Write today for Tube Bag and Our Book No. 37

Firestone Tire and Rubber Company
"America's Largest Exclusive Tire and Rim Makers"
Akron, Ohio—Branches and Dealers Everywhere

Firestone

Non-Skid Tires
Most Miles per Dollar

NON-SKID

You Can Build This House Yourself

Complete Houses From $200 Up.

We furnish the lumber, trim, windows, doors, cut and numbered to fit our plans.

Also paint, finish, stain, nails, hardware, plaster or interior wallboard.

Follow the plans with a hammer; easy, simple, quick, economical.

A permanent, substantial and attractive home results. Not portable. Satisfaction guaranteed. Illustrated catalogue FREE. Write to-day.

Ready Built House Company
984 Broadway, Portland, Ore.

An Even-Bearing Almond Orchard

Nobody ever has any question about the profits in almond growing when almonds will bear good crops and produce fairly uniformly from year to year. The rub has come, as explained in the October issue, in getting them to bear well. The main problem in doing that is to keep them growing well so that they may have the strength to produce, and then preventing frost injury when they do try to set a crop.

HEALTHY GROWTH AND FROST PROTECTION GIVE GOOD ALMOND YIELDS

That can usually be done. H. Lossee, on a 10 1-4-acre orchard north of Chico, has had six crops from his ten-year-old trees. The yield in nuts is not available, but here are the cash returns, the nuts being sold to the packers on the same basis as the nuts of any almond-grower not a member of some almond association: First year (four-year-old trees), $1,800; second year, $2,500; third year, $2,750; fourth year, $2,000; fifth year, $2,840, and the sixth year, 1914, $3,200. The crop has averaged a little less than a ton to the acre. The yield has never been as great as it might have been, except for the first crop, for perfect yields are seldom permitted by the weather, no matter how much attention is given the land and trees.

Soil and Care.

The first thing in production is the soil, as very successful orchards are almost never found on poor land. The soil here is made from a branch of Chico creek and is a light, rich loam that looks as if it would be hard to beat, and it is kept in fine tilth. No irrigation is practiced.

The trees are Non Pariels and Drakes in alternate rows for pollination and financially it is an even break between them for the slightly smaller yield of the Non Pariels is made up by the higher price. This year there were a little more than four tons of Non Pariels and a little over six tons of Drakes. The prices were 17½ cents and 13½ cents. Some new orchard is planted partly to Peerless on account of experience on the farm adjoining of N. C. Jessee, as the Peerless has produced more than the Drakes by a fair margin and the nuts have sold for the same price

Smudging.

Unless something was done to prevent frost injury only half the success would have been obtained, for in the six years there were three crop failures where no orchard heating was practiced. Last year it was necessary to light the oil pots fourteen times and the cost was $35 per acre. The gross returns as a result of the smudging were $280 per acre. Other years very little smudging was necessary and three years the pots did not have to be lighted at all. The longest time it was necessary to put the pots burning was from 10 to sunrise. The pots are lighted when the thermometer reaches 32 degrees and the pots are covered and the flame extinguished when the natural temperature rises to this figure.

Even with this smudging it is nearly always impossible to assure a full crop. The yield, for example, often has been decreased when there was no frost injury on account of rain washing out the pollen from the blossoms. Last year with the spell of 14 frosty nights near blossoming time, it was too cold for the bees to work much and less fruit set as a result than would have if the weather had been good. Still, the old saying that the Lord helps them that help themselves applies more or less here, for good care and frost prevention has given the results named. And it is a very safe principle to go on that it is the strong trees that hold their blossoms well and set fruit well. A tree with too much wood for its roots, or with so little vigor that it can make only a small wood growth, will lose its fruit on the slightest excuse—frost, hot weather at the wrong time, cool weather that is hard on pollination, etc. On strong trees strong buds form, the tree has strength to make the nuts and then by smudging the frost is kept away and whatever trouble comes up aside from frost the tree, being strong, has the strength to meet and overcome it as much as it can be overcome.

The Farm Bureau of Yolo county has issued a bulletin dealing with the work of the county farm adviser. This will be published monthly. The bulletin tells of the different meetings held or to be held by the Bureau and Farm Centers and speaks of cultural topics of the season, including, in the last issue, spraying for peach blight or shot hole fungus, plowing methods, and the evils of burning straw. The Bureau has opened an exchange through which farmers can buy or sell to one another stock, tools, or farm produce.

The San Joaquin County Farm Bureau, Frank F. Lyons, Farm Adviser, has also issued a monthly bulletin following the same lines as that of Yolo county. The main topic discussed in the bulletin is humus. Quite a list of materials listed in the Farm Exchange is given.

Things Settlers Should Know

"Some Things the Prospective Settler Should Know" is the title of a new circular, No. 121, a 60-page booklet just issued by the Agricultural Experiment Station of the University of California, the author being Thomas F. Hunt, dean of the College of Agriculture and director of the station, and others of the staff. Dr. Hunt, a man of wide experience and ability, came to California two years ago and seeing things with the eyes of a newcomer, appreciated far better the things a new settler would wish to know than would an old Californian and he has put a wealth of time and effort on the circular.

Proofs of the bulletin were sent out for suggestions and corrections, and as it stands it can be considered authoritative on the subject it covers. The bulletin also contains articles by authorities on the different branches of agriculture, suggesting matters the prospective planter should consider in undertaking the production of various products. Among the different products mentioned in this way are the almond, alfalfa, barley, beans, beets, citrus fruits, cotton, figs, grapes, onions, olives, pears, potatoes, prunes, semi-tropical fruits, walnuts. The circular thus covers ground that should make it very valuable to every farmet no matter how long he has been engaged in California agriculture.

The bulletin discusses many fundamental matters, among them soil characteristics, possible yields and average yields, investment needed for satisfactory income, size of farm, influence of price, estimating value of land, sale of land, hardpan, drainage, good and bad lands, purchase of land, how to locate, climate as affecting crop production, farm labor, getting started, the renter and his opportunities.

Here are some of the warnings given in the bulletin: Do not figure too high on prospective yield. Do not figure too low as to the amount of land you will need. Do not expect to make a satisfactory living at dairying on 20 acres. In selecting land be sure the soil is deep and well drained; hardpan and alkali go along with lack of proper drainage. Consult the University and United States soil surveys when available. Remember that the sale of land for purposes for which it is not adapted has caused great losses and great misery, so be sure the land is suited to the crop to be grown. Watch out that the land title is secure. And in buying land remember that no law can furnish men with judgment.

The circular can be had on application to the Agricultural Experiment Station, University of California, Berkeley, Cal.

PEACH ROOTS FOR STOCKS.

Every fruit grower realizes that there is a difference in the kind of roots best adapted for the different stone fruits, according to the soil and location, and to the kind of fruit grown also. As a general thing the myrobolan is for the heavier, poorer drained soils and is the only root for the stone fruits which will stand long continued flooding. The peach root is desirable for deep, well drained loamy, or rather heavy soils, and for the lighter, and especially drier soils the almond is best adapted. For the apricot, apricot roots are used on the heavier soils as a rule and the peach on the lighter. Sometimes a mistake is made by ignoring some of these facts and one fruit grower recently wrote to the State Commission of Horticulture telling of his loss by having peach root instead of myrobolan on land that was submerged. He states:

"I would appreciate it very much if you would caution people about planting prunes on peach root or peaches on peach root, where they may be covered by seepage water for any time.

"I have an orchard of 23 acres of French prunes on peach root six years old and until now was as thrifty as any orchard you have ever seen, but this orchard the past season was covered by seepage water, or rather the water seeped out of the river, and it was from the middle of December until the 20th of May before I could get a team in this orchard to do any cultivating, as the ground was too wet, and as a result I have lost practically all of my trees and, in fact, every one that has even a small family orchard has lost all the apricot, peach and almond trees, all of which were on peach roots."

Professor C. B. Lipman is the author of a new circular of the University of California on the management of strawberry soils in the Pajaro valley and its problems. Professor Lipman tells of some soil troubles and makes several important suggestions regarding agricultural methods which should be valuable for strawberry growers elsewhere.

"CORONA DRY"
ARSENATE OF LEAD.
ECONOMY "CORONA DRY" Arsenate of Lead—A dry powdered lead arsenate, is much more economical and efficient than the water or paste material.
"CORONA DRY" Arsenate of Lead has been so universally successful, especially in fighting all leaf-eating insects, that it is now the recognized standard.
BOOKLET on "CORONA DRY" Arsenate of Lead free for the asking.
NOTE WE are advised that the European war is forcing the price upward. An immediate purchase of your needs appears advisable.
DEMING PUMPS.
NO MORE TROUBLES For service, satisfaction, efficiency and durability the Deming Spraying apparatus can not be equaled. A Deming does away with your spraying troubles.
CATALOGUE free on request.
SPRA-SULPHUR.
A SAVING A new form of Sulphur—100 lbs. equals a 600-lb. barrel of lime sulphur. Less cost, less freight and better in every respect.
WRITE us for full particulars.
For better service please address all communications to Dept. O.
Germain SEED & PLANT CO. Established 1871
326-328-330 SO. MAIN ST.
LOS ANGELES. CALIFORNIA

HAVE YOU A HOME?
How many who read this have often wished for a home they could call their own.
The high cost of building has doubtless deferred many from building the kind of house that would like.
Our modern method of building bungalows is within the reach of everyone.
WHY PAY RENT?
If you want a city, country or ranch home, garage or building of any kind, write for our free catalogue of K. P. C. Portable Buildings.
KENYON PACIFIC CO.,
No. 3 Franklin St., S. F.

The Problem of Getting Started

I am going to purchase ten acres of land, making a small cash payment, if possible, this fall. I am intending to plant a commercial orchard and for every detail of the purchase, land and trees, I am going into debt. Am on the shady side of life, have ordinary intelligence, no habits formed that cannot be laid aside to assure success and through life, until late, have been called a successful man. And now I would like your suggestions as to the best orchard to plant. I should also like suggestions on the best crop to plant between the tree rows to assure a profit that would pay the deferred payments as the yaccure, having in view a staple crop that would give fair returns from the least labor. I should appreciate suggestions from successful growsr.—A. H. M., San Francisco, Cal.

Our first suggestion to you would be to get the circular just issued by the University of California at Berkeley on "Some Things the Prospective Settler Ought to Know," and after going over it carefully you can have a clearer view of the problems before you and the method of attack. As the proposition is stated in your letter, we would say that it can't be done, or if it is done, there must be some very exceptional things about the conduct of the programme.

Without capital and without farm experience under California conditions we would say that your best hope would be to go and work as a farm laborer for a while. You can then get better in touch with the right land to go after, the right crops to plant, and so on, than you possibly could by trying to start directly from the city, for it is an awfully big job you have ahead of you.

Then, if you are out in the country and see where you stand, the best method of getting started as we see it, without reserve capital to take one over the rough places, would be to rent a place on a share basis, or if your capital is sufficient, on a cash rental basis, and if you have the qualifications for farm success, you certainly can get some place on a lease with the option of buying on good terms. That would be far more workable a plan than to try to buy a small place on a shoestring and develop it and pay for it out of its earnings, without having a number of years of grace before other payments become due. We believe there are lots of non-resident land owners who would be glad to have a man work and develop their place, paying him with a few acres and perhaps a small sum per month to keep him going. The main difficulty they have is to get a man who will take hold and who can be depended upon. If you would be capable of developing and paying for ten acres for yourself you should be capable of making good on a proposition like that, and we believe it would be more feasible to take up the latter.

Unless you have friends who would back you in buying a place we do not see how you could go into debt to the extent you expect, for getting credit unless there is good value behind it is hard, and harder now than ever. There are also two fundamental difficulties about starting a place without capital. One is, that it takes a long, long time before a new place can bring in any income. It is one thing to keep going on a producing ranch and quite another to bring land up to a producing condition. Developed property is always worth far more than undeveloped. While you were getting the land ready to earn something your living expenses, interest on borrowed money, deferred payments, etc., would swamp you. That is one reason why it would be better to start on a rental basis or in some such way.

The second fundamental difficulty is that, not only is the income slow in developing, but there are expenses galore required for development. On a ten-acre place to make it produce well, you would have to develop irrigation supplies, level the land, build the ditches, purchase tools, etc., etc., to an amount few people without the experience ever count on.

There is just one way you could get along on a small, undeveloped place and that is by working around at other farms to get enough to keep the pot boiling, fixing up your place in your spare time and getting equipment as you can.

Ten-Acre Farms.

The ten-acre farm is a hard proposition, unless it is citrus fruits or some other highly specialized production, on fine soil and in a fine location. Leaving out citrus, poultry and perhaps a few other things, the ten-acre farm is likely to be mostly garden truck, or a lot of small stuff sold around locally. We would not say, however, that a small family could not live very comfortably on such a place, though they would not make much money.

An orchard of the ordinary sort would hardly be the thing you would plant, for several reasons. For one thing the varieties to plant depend absolutely on location. It is utterly impossible to tell a man that pears, apricots, cherries, or what not, are profitable fruits, and then have him buy land and plant such trees. The probabilities are that his location would be unsuitable for any fruit he intended to plant.

Furthermore, no one can say that any one fruit will be profitable and stay profitable, for markets are always changing. The more certain profits are, the more difficulty in getting the right location for such fruit. For example, Bartlett pears are about the safest bet in California, but it is few places you can do well with them. If you could plant them on any good land the production could soon be overdone. Hence, from the standpoint of location and marketing, it is impossible to even suggest fruits to plant.

And then fruit trees are a poor proposition to begin on without capital, for they bring in no returns for several years, require labor that is needed for other work, and take up land which should be given to other crops. You cannot grow inter-crops enough to support yourself, the orchard and the money lender, or it is remarkable if you succeed in doing so.

Berries, possibly, are the most profitable inter-crop; pumpkins the most common and most desirable in certain respects, but as income producers they do not amount to much. As a rule, it is necessary to irrigate if both trees and field crops are grown on the same land.

As far as the staple crop you ask us to name, which will give fair returns from the least labor, there is no such thing, though it is the goal of many persons to find it. Alfalfa is nearest the staple crop for California, but prices went to ruin this year. And almost invariably it is the thing requiring the most labor which is the most dependable and the most profitable, and it is fortunate for the race that such is the case.

A Possible Place.

As a general rule we would state that the safest proposition in California to-day is alfalfa and the dairy cow. The biggest money-maker, the least expensive to start on, the safest, except for hog cholera, and the cholera can be insured against, the one requiring only reasonable amounts of labor is the hog, provided he is fed and cared for properly. And alfalfa, the greatest California staple, is the best crop to raise for hogs, provided sufficient grain or other carbohydrates are fed with it. We should say, from observation, that it would be possible after a start was once made, to get along quite nicely on an irrigated place of about ten acres planted mostly to alfalfa, with three or four cows, some hogs to eat most of the rest of the alfalfa, with three or four cows, some hogs to eat most of the rest of the alfalfa, chickens to eat the skim milk and grain bought for pigs and chickens, a few other things being raised for stock and

(Continued on Page 20)

FARM THE SIEVE-GRIP WAY

The 30 H. P. tractor I purchased from you has now been in service about six months. It has been used in the various capacities for ranch duty. It has pulled 56 inches of plow bottoms at an average depth of 6 inches, through about 200 acres of river bottom land. It has pulled 18 feet of smooth harrow at high speed over much of the same territory and has dragged a 10-foot double disc harrow over an area equal to that which it plowed.

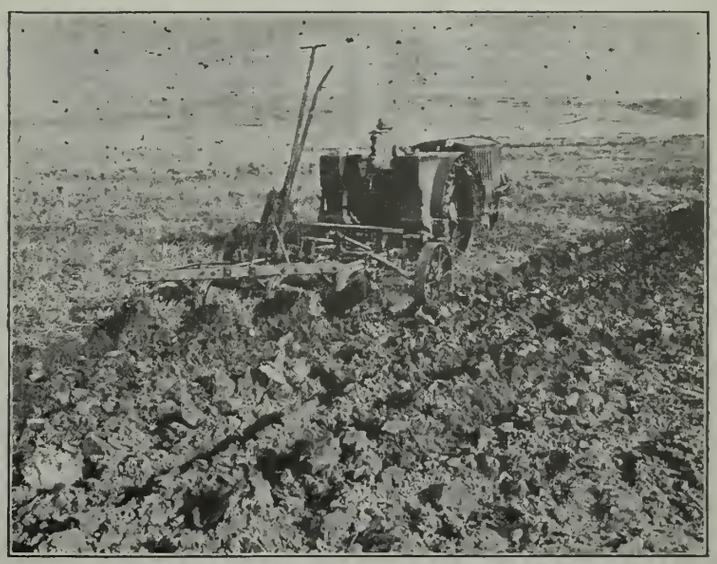
This, of course, has not required a great deal of its time, but at this service it has met the greatest strains.

The next month will see the tractor steadily at work on a 6-inch pump, raising water 25 feet for irrigation purposes.

As nearly as I am able to judge, the Samson Sieve-Grip Tractor is about as near "fool proof" as any machine offered to the public and with an operator of average intelligence will, within the limit of its rated capacity, give entire satisfaction when at any duty for which it is adapted.

Sincerely yours,
(Signed) M. N. YOCUM.

Note.—The tractor has been operating the pump above mentioned for more than a month.



SAMSON SIEVE-GRIP TRACTOR AND ITS 14 YEAR OLD DRIVER

SAMSON SIEVE-GRIP TRACTOR

ENGINE AND TRANSMISSION COMPLETELY PROTECTED FROM DUST OR DIRT

WHEELS DO NOT SLIP IN WET OR SANDY SOILS

SAMSON NON-KICK ENGINE SAFETY STARTER. YOU CANNOT GET HURT

AIR FOR CARBURETOR CLEANED THROUGH MOISTO-RIZER

MADE IN CALIFORNIA, U. S. A.

WRITE FOR CATALOGUE O. A.

SAMSON IRON WORKS 1106 AURORA ST. STOCKTON, CAL.

New Facts About the Olive

In the report of the director, Agricultural Experiment Station, some very valuable points regarding olives are given, which hardly justify the publication of a bulletin, though the information is well worth knowing. One of the points brought out relates to seeds.

According to most European authorities, the best olive trees are those grafted on seedling roots, and there is evidence in California that this is true, although propagation is usually from cuttings, or tips. The germination of olive seeds for the purpose of raising seedlings to bud or graft offers some difficulties due to the large proportion of imperfect seeds in some samples and the slowness of germination in all.

It was found by testing much seed that the proportion of bad seed varied from 0 to 46 per cent. The bad seeds are of lighter weight than good and can be removed by placing all in salt solution, the sound seed sinking and the bad floating.

The best concentration of the salt solution depends upon the condition of the seed. Seeds freshly separated from the pulp gave the best separation in a solution containing 25 parts of salt to 100 parts of water by weight. Dried seeds gave the best separation in a 10 per cent solution. After soaking dried seeds for two days in water, as satisfactory separation was obtained as with fresh seed in a 25 per cent solution. By soaking much longer the poor seed sank also, and a good separation was impossible. By removing the poor seed the first step was taken in obtatining a satisfactory germination.

Hurrying Germination.

If planted without treatment, even good seed is very slow in germinating, most usually requiring a year or more, so after finding only the good seed it is necessary to do something to assist germination to get satisfactory results. Light seeds were eliminated in the 25 per cent salt solution, and the heavy seeds were planted in flats in soil composed of three parts sand and one part garden mulch. The flats were filled to within one inch of the top, seeds were put in and one-half inch more soil added, the whole being well firmed. The ground was kept moist at all times.

The best results were secured when the apex of the seeds were cut. The Redding olive seed gave 88.4 per cent germination by August 8, when the seeds were soaked in water 15 days and the apex cut. When the base was cut after soaking, it gave 80 per cent germination, and when soaked in water 15 days and not treated otherwise only 30 per cent germination. Experiments with poorer seed, grown at Berkeley, showed that the soaking before cutting the apex was beneficial, also that some other kinds of treatment helped more or less, though not as much as the cutting of the apex. Soaking in water alone was useless, in dilute sulphuric acid of little use, and planting in the pulp unsatisfactory also, as none started within five months after planting.

Pickling Processes.

An important matter in pickling is the removal of the bitter substances, which lye is used to extract. Certain varieties of olives, and all varieties when too ripe, become soft when the lye solution is used. If salt is used in the solution it counteracts this softening effect. If too little salt is used, it has little effect; if too much, it delays the action of the lye. About 3 per cent of salt appears to be suitable and sufficient, even with strong lye solutions.

Olive Paste Possible.

A valuable suggestion for the profitable use of small olives appears in the making of olive paste. There are many olives too small for pickles which are of little value for oil, and fairly successful attempts were made to use these for the manufacture of olive paste, something like the meat pastes found on the market. Overripe, bruised and frost-bitten olives were used in the same way.

It was found possible to remove the pits from the fresh olives, grind up the pulp, remove the bitterness, salt to taste and thus produce an olive paste that was relished by everyone to whom it was submitted and usually pronounced better than any meat paste and even better than the best ripe pickled olives. The processes tested were rapid, requiring from forty-eight to less than five hours. It is probable, it is stated, that a process could be devised which would be continuous.

One difficulty is the loss of weight in manufacture. The removal of the pits removed from 15 to 30 per cent of original weight, and further processing made a loss of one-third more, though part of this probably could be avoided. With the methods used, a ton of small olives would yield on the average about 1,000 pounds of olive paste. As the process of manufacture is simple and inexpensive, even this yield should be more profitable than oil-making if the public would be willing to pay as much for the olive paste as for meat pastes.

INCREASING THE WHEAT YIELD

At the State Fair the University of California had a very striking exhibit showing the increase in wheat yield following different methods of culture. Wheat was placed in thin glass jars of even thickness throughout, the height of the wheat in each jar being proportionate to the yield when different kinds of culture were followed.

The smallest amount of wheat, or the jar with the shortest column of grain, was that representing average wheat production, where shallow plowing is practiced and little, if any change is made in depth of plowing or kind of crop grown. The yield under these average conditions was stated as being thirteen bushels, or 5.7 sacks per acre. Deep plowing, eight inches, and putting the wheat in with a drill made a spectacular change, the crop amounting to 29.78 bushels, or thirteen sacks per acre. Deep plowing, sowing the wheat with a drill and summer fallowing, made a much larger yield yet—41.6 bushels, or eighteen sacks, which is nearly as good as can normally be obtained.

A small increase over this was even yet secured by the growing of field pease to be plowed under as a cover crop, giving 43.3 bushels per acre, or nineteen sacks. The ideal yield on good, average land, with deep plowing, plenty moisture, favorable season, fair amounts of humus in the soil and some small fertilization was 50.60 bushels per acre, or twenty-two sacks. As Lincoln said, it may take more work to raise fifty bushels of corn on one acre than to produce ten bushels, but it may take less work to raise fifty bushels on one acre than to raise it on five acres. The illustration at the State Fair, from results obtained at the University Farm, indicates that the same work put on a smaller area in extra plowing and care might easily mean far larger yields and profits.

The Crop Reporting Board of the U. S. Department of Agriculture reported California cotton at 98 per cent of normal for August 25, and that of all the United States at 78 per cent of normal, as compared with 68 per cent the year before on the same date.

Without question the best wearing shoes obtainable. The latest styles and a comfortable fit.

Mayer

HONORBILT SHOES

Made of the best bark tanned leather—combined with the most skillful shoemaking; genuine quality shoes at a reasonable price.

WARNING—Always look for the Mayer name and trade mark on the sole. If your dealer cannot supply you, write to us.

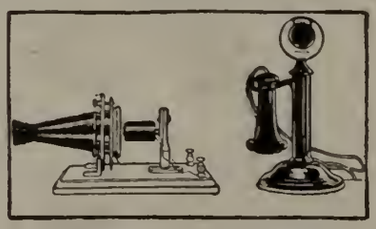
MILWAUKEE Mayer CUSTOM MADE HONORBILT

We make Mayer Honorbilt Shoes in all styles for men, women, children; *Drysox*, wet weather shoes; *Yerma Cushion Shoes, Mortho Washington Comfort Shoes.*

F. Mayer Boot & Shoe Co., Milwaukee

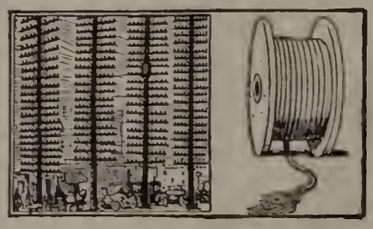
How the Public Profits By Telephone Improvements

Here is a big fact in the telephone progress of this country:



Original Bell Telephone 1876 — Standard Bell Telephone To-day

Early Telephone Exchange — Typical Present-day Exchange



If City Wires Were Carried Overhead — 800 Wires in Underground Cable

Hand in hand with inventions and developments which have improved the service many fold have come operating economies that have greatly cut its cost.

To appreciate these betterments and their resulting economies, consider a few examples:

Your present telephone instrument had seventy-two ancestors; it is better and cheaper than any of them.

Time was when a switchboard required a room full of boys to handle the calls of a few hundred subscribers. Today, two or three girls will serve a greater number without confusion and very much more promptly.

A three-inch underground cable now carries as many as eight hundred wires. If strung in the old way, these would require four sets of poles, each with twenty cross arms—a congestion utterly prohibitive in city streets.

These are some of the familiar improvements. They have saved tens of millions of dollars.

But those which have had the most radical effect, resulting in the largest economies and putting the telephone within everyone's reach, are too technical to describe here. And their value can no more be estimated than can the value of the invention of the automobile.

This progress in economy, as well as in service, has given the United States the Bell System with about ten times as many telephones, proportionate to the population, as in all Europe.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

A Comparison of Grain Sorghums

Although the different grain sorghums, like Egyptian corn, milo and kafir, will not be planted until next spring, the fall of the year is the best time to size up results and also to look after seed. There is strong reason to believe that these grain sorghums will be grown far more in the future than in the past and that progress will be made in their selection. Feterita, for example, though hardly known over most of California, seems likely to be the best sorghum of all to grow in most places.

At the State Fair in Sacramento the University of California had an exhibit of the grain sorghums, based on experience on the Davis Farm. The different kinds were placed side by side, the tallest at the center and the shortest at the ends, each variety being labeled, and a few general points being given about production of grain and forage, comparative value and leading characteristics.

One fact seemed to be pronounced. The greater the value for grain as a rule, the less value for forage and similarly, the better a variety for forage, the less valuable for grain production, though this does not always hold good and nearly every variety has its own special value or disadvantages.

At one end was Egyptian corn, short of stalk and a fine grain producer, 40 bushels per acre being given as average yield under fair conditions. It likewise was of especial value for its drouth resistance, but is disliked for the crooked neck. Its value as forage was stated as being very low. The high grain yield is the strong recommendation.

Adjoining this was a bunch of Shallu, sometimes called Egyptian wheat, the grains being small. It was counted as being inferior as a grain producer and, although superior to Egyptian corn for forage, inferior to kafir, its next neighbor, as forage.

The kafir, a very prominent sorghum for some parts of the country, was stated as yielding 30 bushels per acre, and being likewise very good as a forage. This was much taller than Egyptian corn.

Still taller than kafir was feterita, one of the finest possibilities of California, and already the most prominent sorghum of Western Kansas and of parts of the Southwest. Added to this was the fact that it produced, so the University placard stated, 45 bushels per acre against 40 for the Egyptian corn, and in addition had erect heads that were compact and little troubled by birds, and it made as well a very fair forage. The yield was thus best of all, in spite of the fact that the forage value was high and the heads erect and compact. According to this, feterita would be the finest sorghum of all, unless a forage only was wanted, or other difficulties were apparent. The growing season is also short, which in some places is an advantage.

At the center of the group, the tallest of all varieties shown, and the best as forage, were honey and red amber sorghums, poor for grain, and not to be grown for grain, but for forage, for which they surpassed all other varieties shown. The dairyman can well note that these are excellent as silage, as well as for ordinary forage purposes. Sweet sorghums have been condemned for silage owing to high sugar content and too vigorous fermentation in the silo. By letting them get past the usual time for cutting for silage, the sugar goes to the grain, the food value is increased and there is none of the ordinary trouble with sweet sorghum silage. The heavy tonnage and good quality makes these two highly commendable as silage.

Going down in height of stalk was the brown Kaoliang, a Chinese sorghum, yield 20 bushels per acre, fair forage value. Outclassed in yield, its value comes in the fact that it has a very short growing season, 100 days, making it a possibility in high elevations, or where seasons are short and other sorghums would be worthless. Persons in such conditions can well note this variety.

Still shorter than this was brown durra, a gooseneck sorghum yielding 30 to 40 bushels per acre and of inferior forage value, so not usually to be commended.

And then to match the Egyptian corn at the left, was milo, on the extreme right. The yield was given as 40 bushels. The short, woody stems made the forage value small, but erect heads, free from smut, combined with the heavy yield, made it the popular variety that it is.

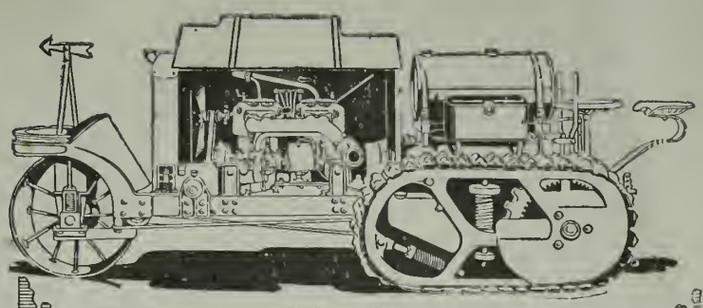
The varieties which the exhibit would appear to recommend were these: Feterita for heaviest yield and good forage producer as well, milo and Egyptian corn for heavy grain yield without regard to forage value; Red Amber and Honey sorghums for forage alone, brown Kaoliang for districts with short growing seasons only.

John P. Daggs of Modesto, with his swine exhibits, also had some feterita over which he was very enthusiastic, planting a little on trial two years ago and raising ten acres this year. Early planting (March) was poor, much not coming up and the rest standing still for a long time after it did come up, but June planting produced extremely well and seems much better than Egyptian corn or milo. It did well on heavy soil and some that could not be irrigated made a fine growth anyway. After the grain was removed and the stock turned in, they ate both leaves and stems. It is going to be used as one of the important factors in swine production on the Daggs ranch, but will be ground before feeding. Feeding whole grain to hogs, particularly one of the grain sorghums, is poor business.

NEW CIDER PROCESS.

A new method of making concentrated apple cider on a commercial scale is to be tried in the Hood River Valley, Oregon, this fall, which has wide possibilities. The cider is made in the usual way, then frozen and crushed fine and put through a centrifugal filter. In freezing, the water only is frozen and the syrup is left, this being removed in the filtering in centrifugal machines and only frozen water left behind. This leaves the cider five times as concentrated as in its natural condition, making possible big savings in freight, packages and selling charges. It will likewise keep much better than cider which has not been concentrated and will be in perfect condition for use by the addition of four times its bulk of water. Previous methods for concentrating cider and other fruit juices by evaporation by heat have been failures, although one process invented in California seems very promising. The method, if successful, should open up a fine market, not only for concentrated apple cider, but for other fruit juices, including grape juice, the manufacture of which is now rather too expensive to make the demand very heavy.

Modernize your farm home instead of moving to town and paying thousands of dollars for what you can have in the country for so many hundreds.



built like a high grade auto

Throughout The Yuba Ball Tread Tractor an endeavor has been made to gain greatest strength with least bulk and weight.

It was the adoption of this policy that made the high-grade automobile of the present day dependable, simple to operate and cheap to maintain.

THE YUBA BALL TREAD TRACTOR

An ample margin of safety is built into every portion of the machine. Each part is made strong enough to withstand much greater strains than it will ever be called upon to bear in the course of ordinary work. Highest grade materials and careful workmanship insure maximum wear and reliability.

In outward appearance The Yuba Ball Tread Tractor resembles an automobile—neat, clean-cut, pleasing to the eye.

There is a booklet describing it fully.

THE YUBA CONSTRUCTION CO.

Dept. B7 433 California St.

SAN FRANCISCO

Works, Marysville

Insects and Diseases of the Season

—Written for Orchard and Farm—

Black Scale on Olives.

The black scale is a well-known pest of the olive as well as of the citrus tree. The adult scale is black, from one-eighth to one-fourth of an inch in diameter with a distinct "H" on the back. At this time of the year we find mostly the young scales, which, when they first appear, feed on the leaves and excrete a sticky honeydew. This honeydew furnished a medium for the growth of the black-smut fungus, and as a result we have smutty fruit and leaves. The sun is shut off from the leaf surfaces by the smut fungus and consequently the leaf functions are thereby impaired. As the young become larger they shift to the twigs and there become full grown, depositing eggs the next May, June and July.

On citrus trees the best method is to fumigate with three-fourths schedule before January, as the scale then become too large for successful treatment. The equipment and process of fumigation is too long for comment in these columns, and those interested should read pages 318 to 336 of Nos. 1 and 2, volume 2, Monthly Bulletin of the State Commission of Horticulture, by E. O. Essig. In spraying the olive it would be better to wait until the crop has been harvested. The following formulae are used:

Distillate Oil Mechanical Mixture.

Water	200 gallons
Caustic soda (95 per cent)	7 pounds
Distillate (28 deg. Baume)	10 gallons

Fill the spray tank with the water and then add the caustic soda, which has previously been dissolved in a small amount of water, and add the distillate; agitate thoroughly.

The formula for the distillate emulsion consists of:

Distillate (28 deg. Baume)	20 gallons
Whale-oil soap	30 pounds
Water to mix	12 gallons

Dissolve the whale-oil soap in water, heating it to the boiling point, then add the distillate; thoroughly agitate while the solution is warm. For use add to each gallon of the above mixture 20 gallons of water.

Crude Oil Emulsion.

Water	175 gallons
Liquid soap	3 gallons
Crude oil (direct from wells)	25 gallons

Fill the spray tank with 175 gallons of water; add the liquid soap; agitate thoroughly for one minute, after which add the crude oil, continuing the agitation while the spray is being applied.

Fall Grasshopper Treatment.

The extent of the loss to crops by grasshoppers is well known. These insects deposit their eggs, inclosed more or less in kidney shaped pods, in the ground during the late summer and fall. These egg masses are generally deposited in the hard waste land along ditch banks and fences. If such places can be plowed, harrowed or disked during the winter time as much as possible, the issuing number of young hoppers the following spring will be greatly lessened.

Cutworms.

To the ordinary observer cutworms are known as dark greasy looking worms, some of which cut off the tops of young growing plants, others climbing up the stalks and eating the leaves. These pests attack a great variety of plants. In the fall and winter most of these species of worms enter the ground and there pass the resting stage in earthern cells. If the fields are plowed and harrowed during the fall and winter months many of these hibernating pests will be destroyed. The writer had an opportunity to observe the effect of this method in a sugar beet field several years ago. Several acres of sugar beets were planted on land plowed the previous fall and several acres were planted on land just plowed previous to planting. Practically 75 per cent of the sugar beets in spring plowed lands were destroyed by the cutworms, which could be easily found in the soil at the bases of the dead plants. On the fall plowed land a good stand of beets was secured.

Spraying for Peach Blight.

The peach blight is a disease caused by a fungus. The effect of this fungus is to kill the winter buds on the fruiting wood, to produce spots on the twigs and to retard the development of the leaves as well as the dropping of the fruit. During the spring with proper moisture conditions there is a considerable gumming of the twigs. This disease, according to Professor R. E. Smith of the University of California, fruits by means of spores which are produced by the fungus in the spots on the leaves and shoots during the winter. These spores germinate as soon as enough rain has fallen to wet them thoroughly, usually in December or January. Therefore it is necessary to spray before the spores germinate, and it is recommended to spray between October 25th and November 25th with Bordeaux mixture, using 30 pounds of bluestone, 35 pounds of lime to 200 gallons of water. In using commercial Bordeaux paste use 10 pounds to each 50 gallons of water.—E. J. VOSLER, State Com. Horticulture.

COLUSA COUNTY PRUNES.

There is hardly an agricultural county in California that is more undeveloped agriculturally than Colusa, or has been more overlooked by new settlers. Almost the only people farming are those who have been on the land for many years. Under these circumstances it is a rather interesting fact that a very great development of the prune industry is occurring.

A couple of decades ago almost the whole State went prune crazy and thousands of acres were planted in places where now hardly a tree can be found. Colusa did its share of prune planting and most of the orchards stuck, though the after effect of the prune boom left the acreage at a standstill and brought neglect to the trees, though they produced sufficiently to hold their own. Then several years ago, when prices picked up again, the old orchards received a grooming. They responded so as to attract more attention; then to invite new planting, and as a result there is a good deal more young prune orchard than bearing orchard.

All of the bearing trees at present are those planted more than 20 years ago. They make about 700 acres and the crop this season, where prunes all over are short, is about 1,000 tons, some estimates being 1,100 tons. Last year the crop was 1,500 tons. The manager of one of the coast county packing plants stated to the writer that he frequently bought Colusa prunes and that they equaled those of his district, which he claimed were the best grown, in quality.

The prunes are mostly grown east of the Sacramento river, though any place with the right soil is satisfactory and all along the river and for varying distances on either side there is a rich, heavy loam, built up by the river and containing great amounts of plant food. The land slopes from the river and can be irrigated from it. Until recently the orchards were not irrigated, but good prices made irrigation come, with such good results that it is the usual thing now.

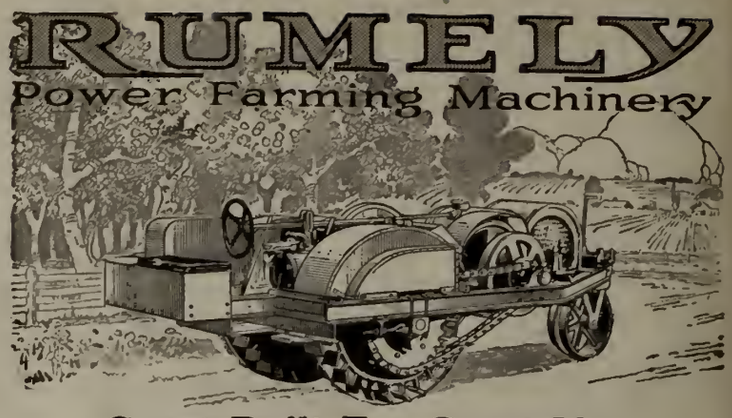
Previous to the renewed interest in prune production no pest control was practiced, but good profits are making good care all along the line. The only two pests that call for consideration, however, are the red spider and the brown apricot scale. The former is worse in dry years than at other times and is easily controlled by sulphuring When not controlled, it is the worst insect pest in the county, if it can be called an insect, as scientifically speaking, it is not.

The brown apricot scale gets very thick frequently, though often it does not seem to do much injury even when the trees are full with it; still winter spraying a number of times has given the finest kind of results the following season, greater results than scale killing alone would appear to justify.

In a great many parts of the Sacramento valley prune growing is looking up in a surprising way. Colusa county is only one place in the valley where present production and the thrift of trees planted a generation ago and neglected for years prove that the prune can be made in this district a great commercial success.

Karakule and closely related sheep are to be shown at the Panama-Pacific Exposition. These sheep are noted as producers of high-priced fur, and cross well with certain long wool breeds, notably the Lincoln. Draft horses from Brittany and Boulogne, France, two fine breeds not represented in America, will also be shown, the war permitting, but the most unique exhibit of all will be that of the Chillingham wild white cattle of England, the parent stock of most British breeds. The herd has been kept pure since 1220 and the animals are wild and fierce. Only two other animals have ever been taken from the Chillingham estate and those sent here will be kept permanently in the Golden Gate park.

RUMELY
Power Farming Machinery



Coast Built For Coast Use

The ToeHold tractor is built on the coast to meet the requirements of coast farmers. It is especially designed for orchard and vineyard work, but will give a good account of itself at practically any power job.

Rumely ToeHold Tractor

It is low, narrow and light. It will plow close to trees and pass under limbs. All parts are protected from dirt and dust. An air clarifier keeps dirt out of carbureter.

The ToeHold drive-wheels are exclusive features. They do not pack the soil, but give flat backward pressure, enabling the ToeHold to deliver maximum power at the draw-bar.

Ask for ToeHold catalog FB32. It gives complete information.

The ToeHold is what you want for your larger power jobs, and the Rumely-Falk and the Rumely-Olds are good stationary engines for your smaller ones. The Rumely-Olds burns gasoline, and the Rumely-Falk stove-tops or kerosene. Every Rumely machine is backed by Rumely service—49 branches and 11,000 dealers. Supplies and parts without delay.

RUMELY LINES

Kerosene Tractors, Gasoline Tractors, Steam Engines, Engine Gang Plows, Threshing Machines, Clover Hullers, Gasoline Engines, Oil Engines, Baling Presses, Cream Separators, Corn Machines, Lighting Plants

RUMELY PRODUCTS COMPANY (Incorporated)
Chicago Illinois
San Francisco, Cal. Portland, Ore. Spokane, Wash.

EVERYTHING FOR THE BUILDER
Bargains in Building Material
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.
Carload Lots a Specialty.
H. McKEVITT & SON
1849 Mission St., Near 14th St. San Francisco.

$18.30 PER HORSEPOWER
Can you buy a horse for $18.30? No! Yet you can get a six horsepower
DETROIT FARM ENGINE
2½ to 18 H. P.
for $18.30 per horsepower. Runs on Kerosene, Gasoline, Alcohol or Distillate. Saws wood, grinds feed, pumps, etc., does any job around the farm. Only 3 moving parts. No cams, gears, sprockets or valves. Positive satisfaction ten year guarantee. 30 day money back trial. We want farmer agents everywhere. Write for particulars.
Detroit Engine Works
515 Bellevue Ave., Detroit, Mich.

BANNERMAN
ARMY AUCTION BARGAINS
Saddles $3.00 up Army Revolvers $1.65 up
Bridles .90 " " B-L Rifles . . .98 "
Team Harness 21.85 " " Swords . . . .85 "
Leggings, pair . .15 " " 7 Shot Carbine 3.50 "
Tents . . . 2.85 " New Uniforms . 1.50 "
Colts Cal. 45 Revolver $7.45. Ctgs. 1c each. 1[illegible] Acres Government Auction Bargains Illustrated and described in 420 large page wholesale and retail cyclopedia catalogue, mailed 25 cents East and 30 cents West of the Mississippi River.
Francis Bannerman, 501 Broadway, New York

Money in Honey—Bees pay. Easy, interesting work. Latest methods of bee-keeping—simply told in our "Bee Primer," Highly instructive. Send today for the book and 6 months' subscription to AMERICAN BEE JOURNAL, Box I Hamilton, Ill. 25c

Handling New Alkali Land

I have 80 acres of undeveloped land in Tulare county on which there is considerable, but not excessive, amounts of white alkali in spots and would like to know whether there is any way to neutralize or overcome this alkali, by gypsum or otherwise, and what it would cost to do so. The land can be irrigated from a well, electric power being available. On an eighty adjoining there is a well 160 feet deep, the water standing at 20 feet. The soil is a sandy loam and there is no hardpan.—H. W. Q., San Francisco, Calif.

For all we can see you have very little cause to fear serious trouble with alkali. From what you say apparently the alkali is not very strong at present and with right cultivation and irrigation there should be nothing to bring it to the surface, and it is surface alkali which makes nearly all of the trouble. Your light, sandy soil, with no hardpan and 20-feet depth for water to sink into, ought to make it easy to have the alkali washed by the water down into the soil and to prevent it from being carried to the surface by evaporation.

The method of procedure which we would advise would be something like this: Plow your land rather deeply before the winter rains start, if possible, or at least in time to get most of the winter rain. Do not harrow behind the plow, and try to leave a torn-up rather than a smooth, level surface. The object of this is to make every bit of water that falls on the land sink in immediately and to prevent the formation of a crust, such as quickly forms on most untilled alkali land and on plowed and harrowed land containing alkali. Later on, when the surface has worn smooth, or a crust forms anyway, keep the surface stirred sufficiently to break this crust and to prevent the evaporation of soil moisture. The reason for this kind of soil handling is to see that whatever rain falls sinks right in and so has an opportunity to carry the alkali down, and that no water has a chance to evaporate from the surface. If it did it would leave the alkali concentrated at the surface, where it would injure vegetation and make a bad physical condition of the soil.

After leveling and checking your land for irrigation, if you want to plant alfalfa, you can probably tell whether the soil is free enough of alkali or not for the seeds to sprout properly. If it is, plant your seed in the usual way and the shading of the surface by the plants, the consequent prevention of evaporation from the soil itself, and the fact that you have a deep, open soil for the water to sink into, will prevent the alkali from bothering later on. If the alkali in any place is still too strong, you can reduce its concentration by the kind of plowing spoken of and then by flooding to wash the alkali down into the soil, following the irrigation by cultivation to prevent evaporation. You will probably find after such treatment that it will be well to grow a crop of milo, or one of the other sorghums on the land.

The fact should always be remembered that the way to get rid of alkali is to wash it down into the soil and to prevent it from gathering at the surface again through evaporation. This you should be able to do on account of your light, well drained soil, with no hardpan, little, if any, black alkali and plenty depth for water to sink into. If the water table was close to the surface, or the subsoil compact, you might have to go at things in a different way.

The gypsum which you speak of is good to neutralize black alkali, not white alkali, for it changes black alkali (carbonate of soda) into the main kind of white alkali (Glaubers salt), and if you have only white alkali there at the start, no change will be made. In fact, more harm than good might be done in some cases by the gypsum in increasing the amount of soluble matter in the soil. When you have black alkali, it is almost necessary to apply gypsum to it in order to do anything whatever, as soil containing black alkali is more than hard to manage and the black alkali is much harder on plants than white alkali, but unless you have black alkali, never mind about the gypsum.

If the land were irrigated from a canal, so as to fill the soil up with water close to the surface, or the soil were filled up over all the district, as is the case in some parts of the San Joaquin Valley, where much fine land has been ruined by over irrigation and alkali, you would probably have to fall back on tile drainage, and the washing out of the alkali by flooding, as is being tried by the University of California on the Kearney ranch near Fresno. Such unfortunate conditions, however, are very unlikely to develop in a district irrigated by wells, for in that case the water table in the soil is continually being lowered and likewise the regular movement of the water is downward, making alkali conditions improve rather than get worse. We thus would say that you probably are safe in going ahead in the development of your property with no special extra expense or extra trouble about the alkali. A little alkali is generally an excellent thing for many crops and an alkali soil usually means a rich soil.

NO OAK WALNUT HYBRID.

For several years a form of the California black walnut has been known which some have supposed was a hybrid of the walnut and the oak. Recent investigations at the University of California have indicated that this is not the case. The trees come from certain normal nuts and one tree in particular has been located from which nuts are secured that produce both normal black walnut seedlings and seedlings of the new type. It has also been found that this new variety of black walnut comes from nuts formed in the normal way, not from abnormal blossoms. It is a pure, black walnut variety. Thus disappears another tradition regarding possible connections between the oak and the walnut.

The editor of Orchard and Farm, by the way, on a trip through El Dorado county this summer with J. E. Hassler, horticultural commissioner, saw an oak shrub upon which many years ago a chestnut had been grafted by an Italian miner at whose door the oak then stood. The graft lived until several years ago and the dead branch was still to be seen projecting up above the mass of brush coming up around the root. Considering the age of the graft, however, the growth was very small. Grafting the chestnut on the oak is at the best only a freak. We have as yet been unable also to ever here definitely of the successful grafting of the walnut upon the oak, which was once stated to be a fine commercial proposition (in theory). The setting at rest the oak walnut hybrid idea by the university still further removes any supposed connection between the two kinds of trees.

BETTER BULBS.

The European war has given the United States better bulbs this year than ever before. Holland is the great bulb producer of the world, but the war has killed all of her markets except the United States. As a result she has far more than she knows what to do with and is sending off only the largest and finest produced. Florists state that they have never seen bulb shipments of such extraordinarily fine quality.

MORE NITRATE.

The Chilean government is reported to be taking advantage of the demoralized condition of the world's merchant marine by purchasing a number of ships which will ply between Chile and the United States, taking nitrate of soda one way and merchandise the other. This will give American farmers more nitrate than ever for fertilizer and also develop a market for their products.

SECOND HAND PIPE

Very best quality of selected second-hand water pipe and standard screw casing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.

Largest pipe works in the West.

WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco

TRADE MARK REGISTERED 1873

VALVOLINE OIL

For Gas Engine Cylinders, Tractors and Caterpillars.

Valvoline Oil Co.

San Francisco Los Angeles Portland Seattle

The Use Of Hercules Dynamite On Farm, Orchard and Ranch

HAVE You Received *Your* Copy of "Progressive Cultivation"?

AMONG the hundreds of coupons we receive every month requesting copies of "Progressive Cultivation" there are always a few the senders of which have neglected to fill in the lines provided for the name and address.

We do not want any man to feel that we have neglected his request. In cases where name and address are lacking, however, we can do absolutely nothing.

Have you written for "Progressive Cultivation" and not received a copy? If so you probably mailed the coupon in a hurry and forgot to fill it out. Will you please send the one at the bottom of this announcement, giving your name and address in full. The book will reach you promptly.

If you have never asked for a copy of "Progressive Cultivation" it is high time you did. From cover to cover it is filled with money saving, time saving information. It tells how and when to use dynamite for sub-soiling, tree planting, irrigation work, rock and stump blasting, drainage work, excavating, felling trees, and many other purposes.

Thousands of farmers are now using Hercules Dynamite and with its aid doing more work and getting better results. If you are not among them please fill out the coupon below *fully* and mail it to us. Your copy of "Progressive Cultivation" will be sent you at once.

HERCULES POWDER CO.
Chronicle Bldg., San Francisco, Cal.

Please send me a free copy of your book, "Progressive Cultivation." I am interested in Dynamite for

_____

_____

_____

Name _____

Address _____

_____

Answers for Farm Problems

LINE BREEDING.—Will you please advise me as to where I can get reliable information as to inbreeding and line breeding for pet stock? I want to know what relatives can be bred without danger and what ones with advantage.—M. P. B., Modesto, Calif.

"Principles of Breeding," by Davenport, chapter 18, on "Systems of Breeding," published by Macmillan, will give you a good deal of information on the subject desired; also "Principles of Animal Breeding," by E. R. Marshall, chapter 15, on "Inbreeding and Line Breeding," published by the Breeders' Gazette, Chicago. However, valuable as book instruction may be in certain ways, we believe that when it comes to breeding, rules are worth very little and that it is the observation and skill of the breeder and owner that is the great thing. Some persons are born to be natural handlers of stock and can become very successful as breeders. Others could obtain only moderate success after a life time of work. As related to the point in question, close breeding is advisable in the hand of a master, but extremely risky normally and a good thing to avoid. It would be possible to mate near relatives with excellent results in one case, but be very bad in many others. The man that would simply go by rule and not by the characteristics of the animals to be bred would be in more than danger of finding trouble. The greatest Hereford bull that ever lived was the result of an accidental mating of sire and daughter and gave an insight as to the occasional possibilities of close breeding, but in average conditions it is very much better not to breed close relatives. The books named should give much valuable light on the subject.

CHURNING TROUBLE.—I am milking only one cow and feed green fodder, small potatoes and wheat bran and the last two churnings the cream failed to turn to butter. The cream was the right temperature, 62 degrees. Is there any known article that will cause the cream to change to butter? I churned the last time four hours continually before the cream showed any signs of changing to butter.—W. H. B., Annapolis, California.

There is nothing in the feed which should develop the difficulty you find. The fat globules in the milk are smaller when a cow is far along in lactation than earlier, which would tend to make it slower for the butter to come. It would come quicker if a thicker cream were churned, and also if the cream were permitted to ripen somewhat more than usual. Secretary F. W. Andreasen of the State Dairy Bureau states that he has frequently known of cases where there was difficulty in churning the cream of one cow, the butter coming more easily when cream from another cow was added. These are the best suggestions we have to offer.

RIGHT FEEDING-MORE ROUP.—Is the ration I feed 400 to 500 chickens balanced? They like it and leave wheat for it. They have mash in the morning, wheat noon and night, green and lawn grass at noon. The mash is by measure (about) 30 pounds wheat bran, 5 pounds corn meal, 5 pounds meat scraps, two five-pound pails of alfalfa meal, ½ pound charcoal, one handful linseed meal and one of the leading brands of condimental poultry food. This is fixed with milk and water. The hens are kept in yards of 50. The reason I ask, is that some of them seem to get the roup. The houses are open front and have good water. It is dripping all the time. The houses are cleaned twice a week and sprayed with Kreso. I do not feed the mash very wet.—F. S., Woodside, California.

Your ration is fairly well balanced, but we believe you could feed somewhat less meat scrap to advantage, reducing the amount to perhaps four pounds instead of five pounds. We would also advise your adding barley to the ration. This grain is very beneficial when fed in moderate amounts, and being less expensive than wheat, reduces the cost of the ration as a whole. By feeding sprouted barley, in morning, which has been soaked overnight and allowed to sprout in a covered trough until the sprouts have attained a length of one-eighth of an inch, and wheat at night together with the dry mash before them at all times you ought to secure fully as good results as at present.

Concerning the condimental food you are using, we do not advise the continued use of such materials. They are beneficial when fowls are in ill-health, but healthy fowls do not need them. If your ration is now proving satisfactory, we would advise your making any changes very slowly.

Your general methods of sanitation are good and we do not think that your methods of feeding have had anything to do with the roup. The fowls have probably caught cold, which in some cases has advanced into the contagious form. We would refer you to our issue of September, 1914, page 28, for methods of controlling roup.

HOG FEEDING.—Being a subscriber, I have noticed your last article on raising hogs on alfalfa. Pasture will be short soon. I have plenty of alfalfa hay and I want to use this up. Can't this hay be chopped up in a hay cutter and mixed with molasses and give the same result as pasture, feeding with 1 pound of grain daily to every 100 pound hog. Where can I buy the cane syrup of molasses which I presume is a very cheap refuse of molasses? I want to feed this to growing pigs which I want for market by the first of the year.—N. Y. Z., Patterson, Calif.

Answer by W. M. Carruthers.

Your subscriber's method of feeding hogs, explained in his letter above, is a very good plan and ought to work out well. If more of our hogmen would use their alfalfa hay the same way as he purposes doing the market would realize a better grade of hogs. Any of the feed stores in San Francisco will be able to help him get molasses. The Spreckels Sugar Company usually has lots of it on hand. It will cost around $10 to $12 for a barrel of 50 gallons. In this issue of Orchard and Farm an article written by C. N. Odell on the subject "Hog Raising on a Dairy and Alfalfa Ranch," might be of some value to the subscriber.

BUR CLOVER SEED.—Will you please tell me of what seed company I can get bur clover seed? I am a subscriber to your paper and read about bur clover in Orchard and Farm. I have heard of bur clover and would like to try it in this State.—H. M. L., Airlee, Oregon.

You can get bur clover seed very probably from any of the large Oregon seed houses, or you can send to the C. C. Morse Seed Company, San Francisco, or to any of the other seed companies advertising in our columns, for seed. In California, seed in the bur can commonly be obtained cheaply from any grain grower or dealer who cleans his grain, provided he is in a section where the clover grows abundantly. We believe, however, that vetch will be superior to bur clover for you, and that if bur clover was going to do well it would be found growing wild in your district, as it evidently is not. Bur clover does best, as a rule, on rather heavy soil and must have plenty of lime in the soil. We do not think it will likely be found in any place where the rainfall is abundant enough to wash out most of the lime from the soil, or where the winters are cold enough to prevent its growth, as it is naturally a winter rather than a summer grower. Try a little, whatever your conditions are, and let us know if it is a success.

ALFALFA FEEDING.—In the September number of Orchard and Farm there is an article by W. M. Carruthers on alfalfa, which advises stockmen to send their calves down this winter to where there is plenty of cheap alfalfa hay. I would like to know where this is, and what accommodations there are for feeding in the winter time, also what the cost would be.—W. H. R., Lower Lake, Cal.

Answer by W. M. Carruthers.

If our subscriber will write to the Chamber of Commerce or Board of Trade in any town in the alfalfa section, they will inform him of parties who are looking for stock to eat up their alfalfa hay. There are several plans which can be used in the feeding of this alfalfa. One can buy enough of alfalfa hay in stacks to feed the calves all winter and use his own men to do the work. Another is to make an arrangement to have them fed for so much per head, and still another to have them fed for half the weight they will gain during the period they are fed alfalfa hay. I have no doubt if you would go down into one of the alfalfa sections you can make some satisfactory deal which will both be profitable to yourself and to the men who supplies the alfalfa hay.

S. S. Southworth of Napa recently purchased from Wisconsin five Duroc-Jersey sows and a boar. Mr. Southworth is expecting to get into the ranks of the Duroc Jersey breeders, and some day before long some of this stock may be heard from.

Soil Fertility

"Soil fertility governs the value of the acreage. It costs just as much to produce a small crop as it does to raise a large one, and the value of the land is very largely determined by the income, or rate of interest on the investment which it will produce.

"Run-down, exhausted land that will produce at best a quarter crop is worth far less than one-quarter of its original value. For agricultural purposes it is dear at any price when you consider the income which would be produced by the same amount of time, money and energy expended on properly cared for fertile soil.

"There is no excuse for allowing a soil to become unproductive. Science has long since found the cause and the remedy.

Maintaining and increasing the fertility simply means replacing some of the nitrogen, phosphoric acid and potash which have been manufactured into crops and sold off the land."

This is a quotation from our book, "The Care and Feeding of Crops," a handy compendium with most valuable information for every grower. If you haven't a copy you should send for one at once. The information contained in it is so valuable that it may be the means of changing failure or moderate success in growing or farming to pronounced success. It has done so for others.

Send for this book at once. It is free.

The Pacific Guano & Fertilizer Co.
805 Security Building
SAN FRANCISCO

THE PACIFIC GUANO & FERTILIZER CO. SAN FRANCISCO, CAL.

GOOD PROTECTION FROM FIRE, WIND, RAIN AND STORM is assured if your buildings are covered with

APOLLO ROOFING

APOLLO Roofing and Siding Products are of the best quality, and reasonable in cost. Made from the well known APOLLO Best Galvanized Sheets, and sold by weight by leading dealers everywhere. Our interesting "Better Buildings" booklet sent free upon request.
AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg., Pittsburgh, Pa.

PATENTS SECURED OR RETURNED ... free search of Patent Office ... HOW TO OBTAIN A PATENT and what to invent ... PATENTS ADVERTISED FREE
WANTED—NEW IDEAS ... Patent Buyers
VICTOR J. EVANS & CO., 836F Washington, D. C.

BRENTWOOD Irrigated Farms
"BEST IN THE WEST"

In Eastern Contra Costa County, east of Mt. Diablo.
63 miles from San Francisco.
Soil and climate unexcelled.
Suitable for alfalfa, fruits, nuts, dairying, poultry and eggs.
Price $[illegible] an acre, including water right.
Write today for illustrated folder, map, etc.

BALFOUR-GUTHRIE & CO.
350 California St. San Francisco

Answers for Farm Problems

PRESERVING CITRON—Can any of your readers give me a good recipe for making citron like we buy in the stores? I have raised some citrons and would like to put them to use.—Mrs. S. E. M., Oakland, California.

We presume you refer to the real citron, which is a fruit of the orange and lemon family, not to the citron melon, which is a different thing entirely and should not be confused with the citron of fruit cake fame. The citron is picked, either before becoming yellow or after attaining a bright yellow, and placed in barrels filled with brine and left for at least a month. The brine is renewed several times and the fruit allowed to remain in it until required for use, often for a period of four or five months. When the citrons are to be candied in the way the product is secured at stores, they are taken from the barrels and boiled in fresh water to soften them. They are then cut into halves, the seed and pulp removed, and the fruit is again placed in cold water, becoming a greenish color. It is then placed in large earthen jars, covered with hot syrup and allowed to stand about three weeks. During this time the strength of the syrup is gradually increased. The fruit is then put into boilers with crystallized sugar dissolved in a small quantity of water and cooked, then allowed to cool and boiled again until it will take up no more sugar. It is then dried and packed in wooden boxes.

COLD FRAME—I should like for some one to give me directions for building a small place (house or hot bed) about 4 by 5 where I can keep my plants through a cold winter; something simple and inexpensive with directions such as a boy or woman could carry out. Have three window sashes to begin with.—"High Altitude," Bellevue, Arizona.

We do not know that we understand exactly what use you are going to make of the structure, but a short outline of the making of cold frames or hotbeds will evidently be what you want and you use it to suit your desires. A cold frame may well be made of inch boards on the sides. The front board can be twelve inches high on the south side, the back eighteen inches high, so that the window sashes will face the south to catch the sunshine. The sides, very naturally, taper from 18 to 12 inches in height. A good size for a frame is three feet from front to rear, any desirable width. You can also make it any height you want, having about the slope of top indicated.

Less heat will be lots at night if the glass is painted. A person can also cover the frame with cloth treated in various ways, if he has not the glass or does not need as much protection as glass will give. The sashes should be raised occasionally, especially on clear warm days, to prevent too tropical conditions from developing and to give fresh air. Too warm air will weaken the plants and the temperature should always be regulated to plant needs. Better not enough heat for best results than too much heat. Possibly this as it stands, or with a good rich loam, will be all that you will need, but if you want extra heat it can be secured by the use of fresh stable manure. Dig into the dirt beneath the frame to a foot or 18 inches or even more and fill with fresh stable manure and straw, packing it down compactly. Cover with about ten inches of fine loam also connected with, and when the manure starts to ferment much heat will be generated. The more straw or old leaves mixed with the manure the less the temperature and heat will be, the richer the manure the more heat. By renewing the manure you can increase the product, by banking on the sides of the frame and putting extra covering on top you can guard against very cold temperatures. By having no manure and leaving the cover partly open you can have nearly natural temperatures, so by modifying practices to needs with a frame like this you can get any results that you require.

SICK WATERMELONS—About the first of August I planted watermelon seeds and they came up fine, some of the vines being over two feet long. The first thing I knew they commenced to wilt. I examined them closely and found some of the leaves covered with black bugs or lice. I sprinkled or sifted dry ashes over them, but it did not do any good. I dug in the ground for cut worms, but that was not it. I watered them night and morning and sprinkled them well with rain water. Did I water them too much? The soil is clay and, I thought, well manured with chicken and stable manure—MRS. J. W. N., Chloride, Arizona.

The insects you saw are evidently the cause of your trouble, though your method of irrigation is not the right thing for watermelons, nor for any other garden crop, and very likely encouraged the lice a good deal. They are much more likely to be bad when there is plenty of moisture near the surface of the ground and in the air than when both ground and air are dry. These melon lice are the greatest thing the melon growers of the interior Southwest have to contend against. In the Imperial Valley ladybirds are distributed to help check the lice, with, it is thought, some success, but not a great deal. On their very first appearance you may hold them back with fair success by spraying with oil emulsions, soap solutions, tobacco extracts, etc., but you have to spray at once and not let them get a start. And now for your method of irrigation—it is just what you should not do. Melons are a desert plant and not used to having moisture around them all the time. A dry surface is the only thing they want or know. Rains are few and far between in the desert and water is best away down, while the surface remains dry. Irrigate as seldom as you can, not as often as you can, and when you do irrigate, apply as much water as is possible, then wait as long as possible before you irrigate again. We get wrathy every time we see a sprinkler going on anything but a lawn. The only way to irrigate in the West, with rare exceptions, is to dig ditches along where you want to put the water and run the water in those ditches, getting as much in as possible and as deep down as possible and moistening as little of the surface as possible, then covering the ditches to keep a mulch and to prevent evaporation. A lot of people seem to act on the idea that exactly the opposite is the case; that a nice thin layer of moist earth on the surface to cool the atmosphere and make a moist appearance is just the thing. Instead of doing good it simply dries out, bakes the soil, breeds disease in the plants and supplies little, if any, moisture to the plants.

It is an abomination—deep irrigation, and a dry surface is the only thing that does any good in the arid parts of the country. Try it and see, or try one-half of the garden one way and the other half the other. And, as before stated, it is very probable that having a moist surface all the time made the lice, bugs, or aphids, whichever you wish to call them, much worse, though they are likely to be bad enough under any consideration. And is not August rather late to plant melons? We do not know your conditions, but do not believe you would have grown much of a crop, bugs or no bugs.

Light Weight Cushman Engines Best for Heavy Sawing

John Dare, Oroville, Cal., writes: "I have sawed about 850 tiers of wood with my 4 H. P. Cushman, and haven't had to make any repairs or lose any time. It is in as good shape as the first day I used it. The Cushman is the only 4 H. P. engine that can handle this work. Throttle Governor giving extra power when saw strikes the log. I have a 26-inch saw, with 100-lb. fly wheel, and when I get this outfit under motion there is something doing. We have sawed logs as high as 20 in. through."

Light Weight Cushman Engines For All Farm Work

Are the lightest, yet most reliable and useful engines made for farm work. Easily moved around to do all the stationary work, as well as attached to power driven machines, such as binders, hay balers, sprayers, etc. Throttle Governed, Schebler Carburetor, Quiet and Steady, Economical of Gasoline, Perfectly Balanced, Almost No Friction. 4 to 20 H.P. 40-page Book free.

Cushman Motor Works
900 North 21st St., Lincoln, Nebraska

MANURE
CARLOAD LOTS
HORSE, COW OR SHEEP
CALL OR WRITE. FRESH OR ROTTED
Pacific Manure & Fertilizer Co., 429 DAVIS ST., SAN FRANCISCO

A Telephone Saves Time and Money

It's easy! With a first-class telephone line from home to town you and your neighbors can talk direct to crop buyers every day without driving over those long miles. You can watch the market for top prices—ask the railroad station if your freight has come—order supplies from the store—find out what's doing at the stock yards—set a time with the grist mill for grinding your grain—get the doctor quick when you need him. Besides all this, you can talk business or pleasure without leaving your own door.

Western Electric
Rural Telephones

are standard for use on the farm. Thousands are in daily use by progressive farmers everywhere. If you are still without telephone service, write us for information on how it can be secured. Write the nearest house below, and mention this paper.

WESTERN ELECTRIC COMPANY
Manufacturers of the 2,000,000 "Bell" Telephones
PACIFIC HOUSES:
San Francisco, Oakland, Los Angeles, Seattle, Portland, Salt Lake City
EQUIPMENT FOR EVERY ELECTRICAL NEED

Answers for Farm Problems

LINE BREEDING—Will you please advise me as to where I can get reliable information as to inbreeding and line breeding for pet stocks? I want to know what relatives can be bred without danger and what ones with advantage.—M. P. H., Modesto, Calif.

"Principles of Breeding," by Davenport, chapter 18, on "Systems of Breeding," published by Macmillan, will give you a good deal of information on the subject desired; also "Principles of Animal Breeding," by F. R. Marshall, chapter 15, on "Inbreeding and Line Breeding," published by the Breeders' Gazette, Chicago. However, valuable as book instruction may be in certain ways, we believe that when it comes to breeding, rules are worth very little and that it is the observation and skill of the breeder and owner that is the great thing. Some persons are born to be natural handlers of stock and can become very successful as breeders. Others could obtain only moderate success after a life time of work. As related to the point in question, close breeding is advisable in the hand of a master, but extremely risky normally and a good thing to avoid. It would be possible to mate near relatives with excellent results in one case, but be very bad in many others. The man that would simply go by rule and not by the characteristics of the animals to be bred would be in more than danger of finding trouble. The greatest Hereford bull that ever lived was the result of an accidental mating of sire and daughter and gave an insight as to the occasional possibilities of close breeding, but in average conditions it is very much better not to breed close relatives. The books named should give much valuable light on the subject.

CHURNING TROUBLE—I am milking only one cow and feed green fodder, small potatoes and wheat bran and the last two churnings the cream failed to turn to butter. The cream was the right temperature, 62 degrees. Is there any known article that will cause the cream to change to butter? I churned the last time four hours constantly before the cream showed any signs of changing to butter.—W. H. B., Annapolis, California.

There is nothing in the feed which should develop the difficulty you find. The fat globules in the milk are smaller when a cow is far along in lactation than earlier, which would tend to make it slower for the butter to come. It would come quicker if a thicker cream were churned, and also if the cream were permitted to ripen somewhat more than usual. Secretary F. W. Andreasen of the State Dairy Bureau states that he has frequently known of cases where there was difficulty in churning the cream of one cow; the butter coming more easily when cream from another cow was added. These are the best suggestions we have to offer.

RIGHT FEEDING-MORE ROUP—Is the ration I feed 400 to 500 chickens balanced? They like it and leave wheat for it. They have mash in the morning, wheat noon and night, green and lawn grass at noon. The mash is by measure (about) 30 pounds wheat bran, 5 pounds corn meal, 5 pounds meat scraps, two five-pound pails of alfalfa meal, ½ pound charcoal, one handful linseed meal and one of the leading brands of condimental poultry food. This is fixed with milk and water. The hens are kept in yards of 50. The reason I ask, is that some of them seem to get the roup. The houses are open front and have good water. It is dripping all the time. The houses are cleaned twice a week and sprayed with Kresa. I do not feed the mash very wet.—F. S., Woodside, California.

Your ration is fairly well balanced, but we believe you could feed somewhat less meat scrap to advantage, reducing the amount to perhaps four pounds instead of five pounds. We would also advise your adding barley to the ration. This grain is very beneficial when fed in moderate amounts, and being less expensive than wheat, reduces the cost of the ration as a whole. By feeding sprouted barley, in morning, which has been soaked overnight and allowed to sprout in a covered trough until the sprouts have attained a length of one-eighth of an inch, and wheat at night together with the dry mash before them al all times you ought to secure fully as good results as at present.

Concerning the condimental food you are using, we do not advise the continued use of such materials. They are beneficial when fowls are in ill-health, but healthy fowls do not need them. If your ration is now proving satisfactory, we would advise your making any changes very slowly.

Your general methods of sanitation are good and we do not think that your methods of feeding have had anything to do with the roup. The fowls have probably caught cold, which in some cases has advanced into the contagious form. We would refer you to our issue of September, 1914, page 28, for methods of controlling roup.

HOG FEEDING—Being a subscriber, I have noticed your last article on raising hogs on alfalfa. Pasture will be short soon. I have plenty of alfalfa hay and I want to use this up. Can't this hay be chopped up in a hay cutter and mixed with molasses and give the same result as pasture, feeding with 1 pound of grain daily to every 100 pound hog. Where can I buy the cane syrup of molasses which I presume is a very cheap refuse of molasses? I want to feed this to growing pigs which I want for market by the first of the year.—X. Y. Z., Patterson, Calif.

Answer by W. M. Carruthers.

Your subscriber's method of feeding hogs, explained in his letter above, is a very good plan and ought to work out well. If more of our hogmen would use their alfalfa hay the same way as he purposes doing the market would realize a better grade of hogs. Any of the feed stores in San Francisco will be able to help him get molasses. The Spreckels Sugar Company usually has lots of it on hand. It will cost around $10 to $12 for a barrel of 50 gallons. In this issue of Orchard and Farm an article written by C. N. Odell on the subject "Hog Raising on a Dairy and Alfalfa Ranch," might be of some value to the subscriber.

BUR CLOVER SEED—Will you please tell me of what seed company I can get bur clover seed? I am a subscriber to your paper and read about bur clover in Orchard and Farm. I have heard of bur clover and would like to try it in this State.—H. M. L., Airlee, Oregon.

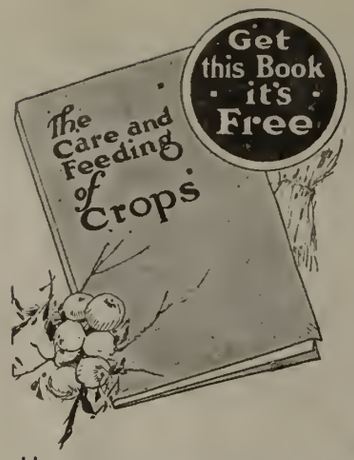
You can get bur clover seed very probably from any of the large Oregon seed houses, or you can send to the C. C. Morse Seed Company, San Francisco, or to any of the other seed companies advertising in our columns, for seed. In California, seed in the bur can commonly be obtained cheaply from any grain grower or dealer who cleans his grain, provided he is in a section where the clover grows abundantly. We believe, however, that vetch will be superior to bur clover for you, and that if bur clover was going to do well it would be found growing wild in your district, as it evidently is not. Bur clover does best, as a rule, on rather heavy soil and must have plenty of lime in the soil. We do not think it will likely be found in any place where the rainfall is abundant enough to wash out most of the lime from the soil, or where the winters are cold enough to prevent its growth, as it is naturally a winter rather than a summer grower. Try a little, whatever your conditions are, and let us know if it is a success.

ALFALFA FEEDING—In the September number of Orchard and Farm there is an article by W. M. Carruthers on alfalfa, which advises stockmen to send their calves down this winter to where there is plenty of cheap alfalfa hay. I would like to know where this is, and what accommodations there are for feeding in the winter time, also what the cost would be.—W. H. R., Lower Lake, Cal.

Answer by W. M. Carruthers.

If our subscriber will write to the Chamber of Commerce or Board of Trade in any town in the alfalfa section, they will inform him of parties who are looking for stock to eat up their alfalfa hay. There are several plans which can be used in the feeding of this alfalfa. One can buy enough of alfalfa hay in stacks to feed the calves all winter and use his own men to do the work. Another is to make an arrangement to have them fed for so much per head, and still another to have them fed for half the weight they will gain during the period they are fed alfalfa hay. I have no doubt if you would go down into one of the alfalfa sections you can make some satisfactory deal which will both be profitable to yourself and to the men who supplies the alfalfa hay.

S. S. Southworth of Napa recently purchased from Wisconsin five Duroc-Jersey sows and a boar. Mr. Southworth is expecting to get into the ranks of the Duroc-Jersey breeders, and some day before long some of this stock may be heard from.



Soil Fertility

"Soil fertility governs the value of the acreage. It costs just as much to produce a small crop as it does to raise a large one, and the value of the land is very largely determined by the income, or rate of interest on the investment which it will produce.

"Run-down, exhausted land that will produce at best a quarter crop is worth far less than one-quarter of its original value. For agricultural purposes it is dear at any price when you consider the income which would be produced by the same amount of time, money and energy expended on properly cared for fertile soil.

"There is no excuse for allowing a soil to become unproductive. Science has long since found the cause and the remedy.

Maintaining and increasing the fertility simply means replacing some of the nitrogen, phosphoric acid and potash which have been manufactured into crops and sold off the land."

This is a quotation from our book, "The Care and Feeding of Crops," a handy compendium with most valuable information for every grower. If you haven't a copy you should send for one at once. The information contained in it is so valuable that it may be the means of changing failure or moderate success in growing or farming to pronounced success. It has done so for others.

Send for this book at once. It is free.

The Pacific Guano & Fertilizer Co.
805 Security Building
SAN FRANCISCO

THE PACIFIC GUANO & FERTILIZER CO. SAN FRANCISCO, CAL.

GOOD PROTECTION FROM FIRE, WIND, RAIN AND STORM
is assured if your buildings are covered with

APOLLO ROOFING

APOLLO Roofing and Siding Products are highest quality, full weight, and reasonable in cost. Made from the well known APOLLO Best Bloom Galvanized Sheets, and sold by weight by leading dealers everywhere. Our interesting "Better Buildings" booklet sent free upon request.
AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg., Pittsburgh, Pa.

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT, with List of Inventions Wanted and Prizes offered for inventions, sent free. PATENTS ADVERTISED. **FREE**
WANTED—NEW IDEAS
Send for our list of Patent Buyers
VICTOR J. EVANS & CO., 836F, Washington, D. C.

BRENTWOOD Irrigated Farms
"BEST IN THE WEST"

In Eastern Contra Costa county, east of Mt. Diablo.
63 miles from San Francisco.
Soil and climate unexcelled.
Suitable for alfalfa, fruits, nuts, dairying, poultry and hogs.
Price $300 an acre, including water right.
Write to-day for illustrated folder, map, etc.

BALFOUR-GUTHRIE & CO.
350 California St. San Francisco

Answers for Farm Problems

PRESERVING CITRON—Can any of your readers give me a good recipe for making citron like we buy in the stores? I have raised some citrons and would like to put them to use.—Mrs. S. E. M., Oakland, California.

We presume you refer to the real citron, which is a fruit of the orange and lemon family, not to the citron melon, which is a different thing entirely and should not be confused with the citron of fruit cake fame. The citron is picked, either before becoming yellow or after attaining a bright yellow, and placed in barrels filled with brine and left for at least a month. The brine is renewed several times and the fruit allowed to remain in it until required for use, often for a period of four or five months. When the citrons are to be candied in the way the product is secured at stores, they are taken from the barrels and boiled in fresh water to soften them. They are then cut into halves, the seed and pulp removed, and the fruit is again placed in cold water, becoming a greenish color. It is then placed in large earthen jars, covered with hot syrup and allowed to stand about three weeks. During this time the strength of the syrup is gradually increased. The fruit is then put into boilers with crystallized sugar dissolved in a small quantity of water and cooked, then allowed to cool and boiled again until it will take up no more sugar. It is then dried and packed in wooden boxes.

COLD FRAME—I should like for some one to give me directions for building a small place (house or hot bed) about 4 by 5 where I can keep my plants through a cold winter; something simple and inexpensive with directions such as a boy or woman could carry out. Have three window sashes to begin with.—"High Altitude," Bellevue, Arizona.

We do not know that we understand exactly what use you are going to make of the structure, but a short outline of the making of cold frames or hotbeds will evidently be what you want and you use it to suit your desires. A cold frame may well be made of inch boards on the sides. The front board can be twelve inches high on the south side, the back eighteen inches high, so that the window sashes will face the south to catch the sunshine. The sides, very naturally, taper from 18 to 12 inches in height. A good size for a frame is three feet from front to rear, any desirable width. You can also make it any height you want, having about the slope of top indicated.

Less heat will be lots at night if the glass is painted. A person can also cover the frame with cloth treated in various ways, if he has not the glass or does not need as much protection as glass will give. The sashes should be raised occasionally, especially on clear, warm days, to prevent too tropical conditions from developing and to give fresh air. Too warm air will weaken the plants and the temperature should always be regulated to plant needs. Better not enough heat for best results than too much heat. Possibly this as it stands, or with a good rich loam, will be all that you will need, but if you want extra heat it can be secured by the use of fresh stable manure. Dig out the dirt beneath the frame to a foot or 18 inches or even more and fill with fresh stable manure and straw, packing it down compactly. Cover with about ten inches of fine loam, also compacted well, and when the manure starts to ferment much heat will be generated. The more straw or old leaves mixed with the manure the less the fermentation and heat, while the richer the manure the more heat. By increasing the manure you can increase the artificial heat, by banking up the sides of the frame and putting extra covering on top you can guard against very cold temperatures. By having no manure and leaving the cover partly open you can have nearly natural temperatures, so by modifying practices to needs with a frame like this you can get any results that you require.

SICK WATERMELONS—About the first of August I planted watermelon seeds and they came up fine, some of the vines being over two feet long. The first thing I knew they commenced to wilt. I examined them closely and found some of the leaves covered with black bugs or lice. I sprinkled or sifted dry ashes over them, but it did not do any good. I dug in the ground for cut worms, but that was not it. I watered them night and morning and sprinkled them well with rain water. Did I water them too much? The soil is clay and, I thought, well manured with chicken and stable manure—MRS. J. W. N., Chloride, Arizona.

The insects you saw are evidently the cause of your trouble, though your method of irrigation is not the right thing for watermelons, nor for any other garden crop, and very likely encouraged the lice a good deal. They are much more likely to be bad when there is plenty of moisture near the surface of the ground and in the air than when both ground and air are dry. These melon lice are the greatest thing the melon growers of the interior Southwest have to contend against. In the Imperial Valley ladybirds are distributed to help check the lice, with, it is thought, some success, but not a great deal. On their very first appearance you may hold them back with fair success by spraying with oil emulsions, soap solutions, tobacco extracts, etc., but you have to spray at once and not let them get a start. And now for your method of irrigation—it is just what you should not do. Melons are a desert plant and not used to having moisture around them all the time. A dry surface is the only thing they want or know. Rains are few and far between in the desert and water is best away down, while the surface remains dry. Irrigate as seldom as you can, not as often as you can, and when you do irrigate, apply as much water as is possible, then wait as long as possible before you irrigate again. We get wrathy every time we see a sprinkler going on anything but a lawn. The only way to irrigate in the West, with rare exceptions, is to dig ditches along where you want to put the water and run the water in those ditches, getting as much in as possible and as deep down as possible and moistening as little of the surface as possible, then covering the ditches to keep a mulch and to prevent evaporation. A lot of people seem to act on the idea that exactly the opposite is the case; that a nice thin layer of moist earth on the surface to cool the atmosphere and make a moist appearance is just the thing. Instead of doing good it simply dries out, bakes the soil, breeds disease in the plants and supplies little, if any, moisture to the plants.

It is an abomination—deep irrigation, and a dry surface is the only thing that does any good in the arid parts of the country. Try it and see, or try one-half of the garden one way and the other half the other. And, as before stated, it is very probable that having a moist surface all the time made the lice, bugs, or aphids, whichever you wish to call them, much worse, though they are likely to be bad enough under any consideration. And is not August rather late to plant melons? We do not know your conditions, but do not believe you would have grown much of a crop, bugs or no bugs.

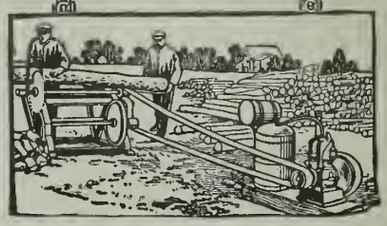
Light Weight Cushman Engines Best for Heavy Sawing

John Dare, Oroville, Cal., writes: "I have sawed about 350 tiers of wood with my 4 H. P. Cushman, and haven't had to make any repairs or lose any time. It is in as good shape as the first day I used it. The Cushman is the only 4 H. P. engine that can handle this work. Throttle Governor giving extra power when saw strikes the log. I have a 26-inch saw, with 100-lb. fly-wheel, and when I get this outfit under motion there is something doing. We have sawed logs as high as 20 in. through."

Light Weight Cushman Engines
For All Farm Work

Are the lightest, yet most reliable and useful engines made for farm work. Easily moved around to do all the stationary work, as well as attached to power driven machines, such as binders, hay balers, sprayers, etc. Throttle Governed, Schebler Carburetor, Quiet and Steady, Economical of Gasoline, Perfectly Balanced, Almost No Friction. 4 to 20 H.P. 40-page Book free.

Cushman Motor Works
880 North 21st St., Lincoln, Nebraska



MANURE
CARLOAD LOTS
HORSE, COW OR SHEEP
FRESH OR ROTTED
CALL OR WRITE.
Pacific Manure & Fertilizer Co., 429 DAVIS ST., SAN FRANCISCO

A Telephone Saves Time and Money

It's easy! With a first-class telephone line from home to town you and your neighbors can talk direct to crop buyers every day without driving over those long miles. You can watch the market for top prices—ask the railroad station if your freight has come—order supplies from the store—find out what's doing at the stock yards—set a time with the grist mill for grinding your grain—get the doctor *quick* when you need him. Besides all this, you can talk business or pleasure without leaving your own doors.

Western Electric
Rural Telephones

are standard for use on the farm. Thousands are in daily use by progressive farmers everywhere. If you are still without telephone service, write us for information on how it can be secured. Write the nearest house below, and mention this paper.

WESTERN ELECTRIC COMPANY
Manufacturers of the 8,000,000 "Bell" Telephones
PACIFIC HOUSES:
San Francisco, Oakland, Los Angeles, Seattle, Portland, Salt Lake City
EQUIPMENT FOR EVERY ELECTRICAL NEED

ORCHARD and FARM
ESTABLISHED 1889
IRRIGATION

VOL. 26 NOVEMBER, 1914 NO. 11

Issued Monthly at Hearst Building, San Francisco, Cal.
Country Life Publishing Co., Publishers
D. J. Whitney ----------Editor
D. W. Hill--------Advertising Manager
Wm. Tyler Smith--Circulation Manager

Eastern Office,
Wallace C. Richardson (Inc.),
41 Park Row, New York

Middle West Office,
James A. Buchanan,
Marquette Bldg., Chicago

SUBSCRIPTION RATES
By subscription 50c per year, three years for $1.00.
To Canada, by subscription, extra postage 24c per each year. Foreign, by subscription, 36c extra per each year.
5c per copy of all newsdealers.

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

MONTHLY COMMENT

During the ceremony of marriage those in attendance are exhorted to "Speak now, or forever after hold your peace." The measures of extreme importance to be decided in a day or so call for the same plan. It is the democratic ideal to discuss and investigate men or measures, but after the decision is made to abide by the will of the majority. The amendments (and the men) have been discussed a plenty, but the exhortation to "Speak now" applies on account of the far reaching effect some amendments will have, notably the proposed Universal Eight Hour Law. Unfortunately most of the arguments opposed to it seem to have been based mainly on the relative advantages of working eight hours, or ten hours, or some time, rather than on the effect of trying to measure all our varied activities with one rule. The rule used for measurement seems to be the man engaged in the strenuous, monotonous and uniform work of punching holes in sheet iron. It is a far cry from that to the night watchman, to the seasonal agricultural worker, to the hostler in a livery stable, to the cattle man, to the train man, to the clerk who has to do special work several days a month, to the nurse, the domestic servant and to the tens of other persons engaged in all kinds of pursuits under all kinds of conditions.

Mark Twain's Watch—Mark Twain had a watch (so he said) which had the habit of loafing along for about ten hours and then racing ahead for two hours so that it always averaged up right each time around. That is something like lots of work in this present day and age and every other day and age. The best work probably is that which comes uniformly, but it all does not come that way—a lot comes like the watch which only averaged right. Some men go to work at eight and quit at five six days in the week, unless there is a short time off on Saturday. Others, of which trainmen are perhaps the most conspicuous, frequently have a long run, or a long time on duty at a stretch, then take a long stretch off. The legal limit now is 16 hours, and trainmen are about the best unionized in America and have most of what they want. Knowing the needs of business, they don't ask for any eight hour law as figured from a 24-hour basis, which indicates the narrow view of the authors of the measure, and so it is with many other trades. If there is to be any legislation on a half sensible basis it would have to take all different trades and situations into consideration.

Other Irregularities—Then there is the other kind of work which is heavy in spots and light in spots, making it different far to put on extra steam and extra hours during the rush season than it would be keeping those same hours uniformly every day in the year. Agriculture is the most important kind of work to which this principle applies, with many days out for rain, then a rush for plowing and planting, a rush for haying and harvest and at some other special times, and slack spells otherwise. To slow men up at the very times that the rush was needed would be like keeping Mark Twain's watch back to normal during its rush hours—it would fall away below average. The point simply is that it is out of the question to run things without making any allowance for variation in circumstances. It is foolish to put a night watchman, who has nothing much to do but loaf and be prepared for emergencies, in the same class with a machinist, or a nurse in the same class with a woman who waits on hotel table, and so on ad infinitum. In view of the ill feeling exhibited in discussions on both sides it is to be hoped that people who favor an eight hour day will see this point and give it due weight.

Too Much Regulation—It does not do to try too much regulation. Regulation of our merchant marine practically swept the Atlantic clean of American ships and left but few in the Pacific. Instead of improving conditions, it abolished nearly the whole thing. Almost the only merchant ships we had until the present war drove foreign ships under our flag were ships in domestic trade. Restrictions about work won't stop work of every kind. Much will move, the rest will go ahead, but what a wallop it will get! Every unreasonable restriction means a wallop for industry, and it is lack of industry that develops our unemployed and related troubles.

Legislature Right—Far be it from us to say that the legislative bodies of America deserve credit for much wisdom. Facts show too much the contrary, but one thing Legislatures do with greater or less care—they take circumstances into consideration when they decide where laws shall apply. For example, they decided that the woman's eight hour law should not apply to domestic service nor to the handling of perishable agricultural products, and by the same token, no one has ever had the face to make any fuss about the exceptions. And a dead certain thing it is, if the Legislature ever got up a universal eight hour measure to submit to the voters there would be numerous exceptions to its application and certain conditions would be made whereby overtime would be permitted. It is a pretty poor apology of a man who will not do some extra work when occasions demand, and it is a rare kind of job where no extra work is ever needed. Leave out agriculture entirely, and take the work of clerks alone: Stock taking comes once a year, perhaps. In nearly every business extra work is needed once a month to balance the books, etc., etc. New Zealand, which has an eight hour law, made all provision for such cases. This law ignores them utterly.

Would Not Stand for It—Whether you call our legislators wise patriots or time serving crooks and imbeciles, the facts of the matter are that they turned down the present measure cold. With more knowledge of legislative needs and methods by far than the average voter, they considered this measure too unutterably bad to submit to the people; perhaps they thought the whole idea was bad, perhaps they thought that the subject was too intricate to be handled without long and careful investigation, but turn it down cold they did. It is only a shame and a disgrace that few candidates for office have the nerve to say for the benefit of voters whether from their knowledge of law enforcement, human nature and industrial methods such a law is advisable or not. Their conduct says it is a very poor measure. Their voices should say so too.

No Patching—Experience has long shown that we should go slow on law making and that few laws are passed but what need patching. This is one of the most far reaching measures ever considered everywhere, and one of the worst things about it is that, bad as it may prove, it cannot be patched. Nature may say one thing, legislation another. Legislation is prevented from moving, so what will the result be? Every paper is justified in speaking of legislative matters; we speak of this through its effect on agriculture. One of the hopes for agriculture if the amendment passes is that owners will do what the law prevents hired men from doing, but it will be a horrible law and a horrible system that will prevent a man from hiring work he usually does himself.

How to Decide—There are 48 measures to be voted upon, most of them requiring full and detailed information before an accurate decision can be made, a lot of them containing "jokers," especially a certain few initiative measures, and some are simply amendments of others. There are three good rules to go by as we see it. For every referendum measure vote Yes, unless you have a good reason for the contrary, for such measures are those which looked good to our legislators and often to the public, but were held up (in some cases) by special interests. For example, the "Blue Sky Act," which the public almost unanimously approved of. Probably the Red Light Abatement Act would fall in the same class, so a good rule is to vote Yes. On the other hand, the Water Commission Act, the idea of which is excellent, passed the Legislature on the narrowest kind of a margin, seems to have faults enough to make the Farmers' Protective League vigorously oppose it, and may require defeat, though its supporters are numerous and enthusiastic.

Legislative Amendments—Then there are legislative amendments which the Legislature put up to the people either because they considered them good, but had not the power to pass them; or because they could not decide and wanted the people to decide; or simply wanted to pass the buck to the voters. Many of them are so technical that it is only a blind guess. The rule in such a case is to guess as well as possible, but it is also a fine, fine rule to let well enough alone when you don't know where you are headed. It is a fine, fine rule to make as few changes in fundamental law as possible. Some things, like woman suffrage, prohibition and so on, the people themselves should decide, otherwise it is well to have experts (if legislators can be called experts—they are the best we have anyway) do the deciding, and we say, unless you feel that the change would be good, do not pass the buck entirely, vote No, and so prevent the continual monkeying with the constitution and laws.

Initiative Amendments—And lastly (in this election it is firstly, for it is those that nearly all the fuss is about) there are the initiative amendments, prepared by some small set of people. Make what exceptions are required, but be dead sure of yourself before you decide in their favor, and remember that No is the right vote wherever doubt arises. For this there are two reasons, or more. There is always a big probability that the Legislature disapproved of such measures, or they would have been passed. There are several now on the ballot whose supporters have been urging them for years, but without success until they had a chance to get them on the ballot by petition. Everyone should naturally believe the Legislature considered them too poor to pass themselves, or even to pass on to the people, or they would have been decided before. And then to cap the climax it is certain that the initiative measures were prepared by enthusiasts, able to look at only one side of the affair, unskilled in legislation or in knowledge as to the practical application of law. The great illustration of this fact this year is the prohibition amendment which has lost many votes it otherwise would receive on account of being poorly drawn up at first, though an amendment to it largely removes this fault.

Summary—Of course, there are exceptions to these rules of voting. Prohibition is a subject eminently fitted for the decision of voters, however they may decide, and because a measure is on the ballot by petition is no proof at all that it was poorly drawn up, though there is strong likelihood that such was the case. One initiative measure, in favor of the University, has much in its favor. We would put down the following rules as being, in our judgment, good. Vote for or against any measures which you have good reasons for approving or disapproving; under no consideration refuse to commit yourself because you do not know, because that would make our whole system of voting on measures more ridiculous than many parts of it seem now; in case of doubt vote in favor of referendum measures, against initiative measures, and against legislative amendments, though be much less strict with your negative votes there than in the other place, and above all things remember that it is a queer rule to which there are no exceptions. May we hereafter have peace and quietness from politics of all kinds!

The Cover Page shows utility herds at State Dairy Show. Top—Holstein herd owned by J. W. Benolt: Middle—Jersey herd owned by Guy H. Miller; Bottom—Dutch Belted herd owned by Ulysses G. Strader.

FRUIT GROWERS' TO MEET.

The programme for the State Fruit Growers' convention at Los Angeles, November 10 to 14, has been announced and copies can be had on application to the State Commission of Horticulture, Sacramento. The headquarters of the convention are to be at the Hotel Clark. The convention is to be held with the co-operation of the citrus experiment station of the University of California; it will be preceded by a convention of the county horticultural commissioners, and outside of the convention at the University Farm this June the programme will be the most elaborate of any convention yet. There will be a difference, however, in that there will be just one meeting going on at a time, in place of several, which in certain respects makes it better for those in attendance.

Special rates are to be given on the railroads, and if a party of 50 will go down by boat from San Francisco the round trip rate will be only $12.70.

Feterita muffins and feterita brown bread are delicious, say Oklahoma chemists. Feterita flour has nearly the same nutritive value as corn and is much sweeter.

The more haste the more gasoline.

Rules and Regulations for the Egg Show

Following are the rules and regulations for the egg show announced in center of page:

1. All exhibits will be divided into three classes; (1) Fancy Class, (2) Commercial Class, (3) Carton Class.

2. Entries must be made on blanks furnished by C. G. Hinds, Secretary Alameda County Poultry Association, Oakland, Cal., or by Orchard and Farm, Hearst Building, San Francisco. An entry consists of one dozen eggs.

3. Entry fees 25 cents, eggs to remain property of exhibitor.

4. Entries must be in the hands of the secretary not later than 6 p. m., November 23, 1914. Shipping charges must be prepaid.

5. The judges will be required personally to place or direct the placing of all premiums.

6. All judging will be done in accordance with the system of scoring described later. Score cards will remain on exhibits during the show and will be mailed to exhibitors afterward.

7. Any misrepresentation on the part of any exhibitor regarding any exhibit shall, at the discretion of the officers in charge, cause the exhibit to be disqualified.

8. No exhibit can be withdrawn before the close of the show without the consent of the officers in charge of the exhibition.

9. All exhibits must be in the show room not later than 10 a. m., November 24.

10. All communications and exhibits should be sent to C. G. Hinds, Secretary, 517 Fifty-third Street, Oakland, Cal.

11. Exhibitors may enter the same dozen eggs in both fancy and commercial classes on payment of a separate entry fee in each class. Eggs entered in the carton class will not be eligible to any other classification.

Methods of Scoring.

In the fancy class eggs will be scored according to the following schedule:

	Points.
Size	36
Shape	12
Shell Texture	18
Condition of Shell	12
Uniformity of Size	6
Uniformity of Shape	6
Uniformity of Color	10
	100

Explanation of Score Card.

Size—All hen eggs, except Bantams, should weigh 24-28 ounces per dozen, and all others should be of a normal size for the breed. Three points should be cut for each ounce over or under weight. Eggs over 28 ounces cannot be shipped in ordinary egg case fillers and eggs under 24 ounces should go as second grade eggs. Weight is very important, for price is controlled partly by size.

Shape—One point is allowed for each egg if perfect in shape.

Shell Texture—Free from wrinkles, rough places, but more especially weak spots and cracks. One cracked egg should be cut its full allowance for shell texture. Allow 1½ points per egg. Very important.

Condition of Shell—Free from dirt or stain and unwashed. Very important.

Uniformity of Size—Uniformity largely controls appearance and all eggs must be the same size. Small or large eggs are not classed as first grade.

Uniformity of Shape—All eggs should be the same shape.

Uniformity of Color—If white, eggs should be pure white, free from tint and of the same shade. If brown, the color may be any shade, but should be uniform

Clasification Fancy Eggs.

A—Asiatic Class.
1, Brahma. 2, Cochin, 3, Langshan.

B—American Class.
1, Plymouth Rock. 2, Wyandotte. 3, Rhode Island Red.

C—English Class.
1, Orpington.

D—Mediterranean Class.
1, Leghorn. 2, Minorca. 3, Ancona. 4, Andulasian. 5, Spanish.

E—Polish Class.

F—Hamburg Class.

G—French Class.
1, Houdan. 2, La Fleche. 3, Crevecoeur.

H—Oriental Games.

I—Bantams.

J—Guineas.

K—Ducks.
1, Pekin. 2, Indian Runner, etc.

L—Turkeys.

M—Geese.

Commercial Score Card.

	Points.
Size	18
Shape	6
Uniformity of Color	6
Uniformity of Size	3
Uniformity of Shape	3
Shell Texture	10
Condition of Shell	6
Quality (by testing)	
(a) Size air cell	24
(b) Internal condition	24
	100

Explanation of Score Card.

Size—24-28 ounces per dozen. One and one-half point cut for each ounce over or under required weight.

Shape—One-half point allowed for each egg.

Uniformity of Color—If white, eggs should be all pure white and of same shade. If brown, the color may be any shade, but the color should be uniform. One-half point allowed for each egg.

Uniformity of Size—All eggs must be of same size.

Uniformity of Shape—All eggs must be of the same shape.

Shell Texture—Free from wrinkles, spots, cracks and rough places.

Condition of Shell—Free from dirt or stain, unwashed. One-half point for each egg.

Quality—Test with candler. (a) Air cell very small, about the size of a dime, indicating freshness. (b) Egg must appear opaque, the yolk free from dark color, white, thick, yolk barely visible. Large egg cells, floating yolks, or air cells, etc., are defects. Eggs must be fresh and sweet.

Disqualification—Cracked, broken, spots, musty rots, and germs or blood rings, in any one egg, will disqualify the dozen.

Carton Score Card.

	Points.
Size	18
Shape	6
Uniformity of Color	6
Uniformity of Size	3
Uniformity of Shape	3
Shell Texture	8
Condition of Shell.	
(a) Size of air cell	20
(b) Interior condition	20
Carton	10

The same explanation of the carton score card holds good as for the commercial score card with the exception of a change needed for the cartons.

Cartons will be judged on attractiveness of design, ease of assembling and packing, etc.

Fancy Class.

Premiums—First, second, third, fourth and fifth prizes in each breed will be awarded handsome ribbons, blue, red, pink, yellow and white respectively.

1. First, second, third, fourth and fifth premiums will be awarded to the best dozens of eggs of each breed.

2. Sweepstakes cash prize of $1 and handsome purple ribbon will be awarded for the best dozen eggs in each class where two or more breeds are represented.

3. Sweepstakes special, handsome cup and ribbon will be awarded for the best dozen brown and the best dozen white eggs in the show.

Commercial Class.

1. First, second, third and fourth prizes will be awarded for the best dozens of brown and the best dozens of white eggs shown. First prize will be $1; second prize, 75 cents; third prize, 50 cents; fourth prize, 25 cents.

Carton Class.

Premiums—Same as for Commercial Class.

Special Sweepstakes Awards.

1. A silver cup will be awarded for the best dozen white eggs in the show.

2. A silver cup will be awarded for the best dozen brown eggs in the show.

3. A handsome medal will be awarded for the best display shown by any one exhibitor.

4. Specials will be awarded for (a) the smallest hen egg, (b) the largest hen egg.

Special Notice.

All awards will be made solely on merit. If only five entries should be made in any class, for example, five premiums will be awarded only if the high quality of the exhibits warrant it.

On November 24 to 26 there will be held the first real Egg Show of the Pacific Coast, a show which starts a new line of development in the poultry business, a show that will be of far reaching and beneficial influence on the poultry business of the Pacific Coast. It will be given in Oakland by "Orchard and Farm" in connection with the annual show of the Alameda County Poultry Association. One admission fee will admit to both shows.

The way the show came about was this: Professor J. E. Dougherty, head of the poultry department of the University Farm School of Davis, first began to write for "Orchard and Farm" several months ago. His first article was on a subject which he considered of extreme importance to the poultry industry—The Egg Show. We said that if an egg show would help the poultry business to the extent indicated in his article, it was up to "Orchard and Farm" to see that one was held, for "Orchard and Farm" helps agriculture in every way, as in the Farm Power Demonstration of this summer and the State Dairy Show this fall. At the time of the State Fair preliminary arrangements were made by the "Orchard and Farm" management, Professor Dougherty and C. G. Hinds, secretary of the Alameda County Poultry Association, to hold the Egg Show in connection with the annual show at Oakland. Complete details can be secured by application to "Orchard and Farm," or to C. G. Hinds, secretary Alameda County Poultry Association, Oakland, Cal.

The poultry show has been a wonderful agency for the development of the poultry industry. Very naturally, it has tended toward the advancement of the fancy rather than the practical side of poultry production. The recently developed egg laying contests have been the only public agencies promoting the practical side. Now the egg show has come to round out the industry, to teach producer and consumer what to look to in eggs. The consumer especially will be benefitted—it will advertise eggs and make a call for more eggs of better quality.

Eggs are to be divided into three classes at the show: fancy, commercial and carton eggs. Fancy eggs will be judged on a breed basis. Leghorns and Mediterranean breeds laying modern sized eggs being in one class, Minorcas and Anconas in another, American breeds in a third, Asiatics in a fourth, English breeds in still another, and so on. The eggs will be judged on size, shape, color, texture and otherwise, as shown on the score cards. Commercial eggs will be judged both on appearance and quality, as determined by candling. Carton eggs will be judged like commercial eggs, but with due weight being given likewise to the merits of the carton.

A very valuable feature of the Eggs Show will be the presence of a number of pens of fowls, probably ten, in a week's egg laying contest. This part will be invitational, accommodations being insufficient for more than a limited number of pens, but it is planned to have pens of the most popular breeds represented. A silver cup will be given for the pen laying the greatest number of eggs during the week the contest lasts. An effort will also be made to have several typical cases of eggs candled out so that visitors can see how many eggs in the average case score "extras," how many are cut for dirty shells, uneven shells, wrong size, poor shape, blood spots, poor color, too great age, or other reasons. Very probably also Professor Dougherty will have down from the University Farm some model houses and other equipment. He will also have down equipment showing fresh eggs, blood spots and over-aged eggs as they appear to the candler. The Poultry Show shows what a fancy fowl is; the egg laying contest shows what a utility fowl is; the egg show shows what a good egg is; the show at Oakland will show all three.

EGG EATING.

An Eastern poultry journal thus answers a question regarding the cause and cure of egg eating:

Egg eating is a bad habit, usually acquired by poorly fed or idle fowls kept in crowded or close quarters and where the nests are open to the light. Keep the birds busy and well fed, do not overcrowd, provide good-sized runs, supply abundant greens and keep the birds busy. Provide dark nests. Gather the eggs often. Don't leave cracked or shoft-shelled eggs in poultry house. Put a few china nest eggs on floor for the hens to pick at until disgusted with attempting to eat them. Salt the mash food enough for seasoning. Supply crushed oyster shells and granulated bone.

It is pleasant to know that many of the best singing birds are likewise among the best insect destroyers.

Beef Production on the Stanford Vina Ranch

Beef production is almost entirely a range proposition in California. The proposition of raising it on high priced land, like that used to grow alfalfa or to grow grain has two angles; one the prospect of increasing the meat supply; the other, the amount of profit that there is in the business. In the latter there is perhaps the prospect of creating a good market for alfalfa hay, of using our grain land to better advantage, of making it pay higher dividends, of keeping up its fertility.

On the Stanford Vina ranch at Vina, Tehama county, Shorthorn steers are being raised on grain and alfalfa land entirely and on a big scale. The methods are to a certain extent in process of development, but are quite a success at their present stage, such a success that the manager, W. G. Stimmel, counts the alfalfa hay in at $10 per ton. It is worth that in beef whether it sells in the market at $4 or $14. This gives a line on the commercial aspects of the case. As the thing is conducted, it is just the thing to fit in on a big grain ranch which the owner wants to use to the best advantage and at the same time to develop a part by irrigation to alfalfa. The thing also has dairy aspects that are valuable for our dairy interests to look forward to, though of that anon. First to the grain side of it.

This Stanford Vina ranch is one of the great ranches of California, with tens of thousands of acres of poor quality range, used for sheep, and well over ten thousand acres of rich valley land by the Sacramento river, in vineyard, fruit, alfalfa and grain, or pasture. The alfalfa acreage is gradually being increased at the expense of vineyard, orchard and grain. There are for the stock about 5,000 acres of good land and 800 head of cows, or 2,500 head of stock, old and young, steers and otherwise are supported by it.

Rotation of Land.

The land is grain farmed on a three year system. First there is a crop of grain, the stock being turned on the land as soon as the grain is off, getting feed from stubble and straw. Altogether about half the straw is probably eaten and the rest is tramped in or lies on the ground to rot or be turned under some seasons later. The following season a volunteer crop of hay is cut and the stock again turned in on the stable. Then the third year the field goes for natural pasture. By this sytem the soil is kept up with manure and plant growth and produces well both grain and meat. It falls off not at all in fertility, but improves if anything. The system also helps to keep down the weeds.

One important feature of the system is that the stock is kept moving all the time and pastured with judgment, so that the stock which needs the best feed will get it, those that need less feed going to the second table, and no field being used so that much grass will be trampled down and spoiled. Cows with calves to support, for instance, or needing good feed after weaning their calves, will be put on fresh fields with lots of feed, taken off soon and put on other land, and young stock put in their place to clean up after them. This not only works well from the standpoint of utilizing the feed, but the cattle do better with the continual changing than they would if they were kept on one large pasture for a long time. Other large grain ranches could keep lots of stock to advantage by this system, whereas most cattle on them now have to put up with those parts of the ranches that are too poor for grain farming and the cattle are poor too.

Alfalfa Hay.

On the Stanford ranch hay for winter is almost a necessity. On other grain ranches it might or might not be, depending upon conditions.

Prize Shorthorns at State Fair, the Greatest Breed for Intensive Beef Production.

In any case it would be quite sure to be very profitable. Sometimes the winters are so dry that hay has to be fed to keep the stock in the best of condition. Other years the river overflow cuts down pasture and hay has to be fed on that account. The more alfalfa and other hay that can be fed the better the condition of the stock and the more that can be kept.

The cows are put on alfalfa pasture in fall, especially on the old fields containing a lot of wild grasses. Water is kept off them toward the end of the season and the alfalfa is let get old and woody, in which condition it is nutritious and not likely to cause bloat.

It is for the calves and in the production of a high-class, quick-growing steer, however, that the alfalfa is of the most account. The whole proposition is to turn off steers at as early an age as possible with a good size. They now go to the block at a flat two years and very likely with the farther development of the system they will be made ready for the butcher in twelve months' time. As marketed at two years, they weigh approximately 1,000 pounds.

Calfhood.

The calves are taken from their mothers about the latter part of September and are put in bunches of about 150 to 200 in feed lots covered with large oaks, for shade and shelter. Heifers, steers and what bulls are raised are kept together until spring, each bunch of calves being composed of animals of about the same age, size or vigor, so that all will have an equal chance at the field.

They are fed in these lots of alfalfa hay, grain hay and grain straw. After a while it is planned to grind all the alfalfa and then it will be worth far more and, besides, more grain straw can go with it and it will in that form and combination be a better feed. Still, it takes a long time to develop everything that one sees can be done to advantage in the beautiful future. The hay works pretty good as it is.

That right idea is probably to feed the calves with one's eye—to give them just what they can stand and do best, but this is out of the question on a big ranch with so much to attend to. Instead, when they are taken from their mothers Mr. Stimmel starts them off with ten pounds a day of alfalfa hay, about two pounds of grain hay and all the grain straw they care to eat. This latter is put in fresh every day. Then he looks them over frequently and if they start to scour, or seem to have more feed than is good for them, less feed is put out, and if they seem to be able to take more, it can be given, but ten pounds seems to have proved the right amount for calves of that age, weighing about 300 pounds. If given all they would eat they would make themselves sick, as some, when they had opportunity, have eaten twenty pounds a day.

Later Care.

In spring the bulls are taken away from the others and the steers and all the young stock is put on pasture, then on stubble and kept cleaning up feed on fields that are good enough to keep them going nicely. In the winter following they are fed on alfalfa and other hay with the idea of bringing them through as strong as possible and as a result when spring comes they have a big frame, a fine appetite and are in fine condition to take on weight. If desired, they could be finished for the butcher by grain feeding at this time, or earlier, but the finishing is done on the spring pastures. In the fine condition in which they start the spring they fatten up with a rush as soon as they get out on the grass and since this process has been started they have beaten all range steers of this part of the country by a month, getting to the market at its top. A year and a half ago they brought $7.50 f. o. b. Vina. This year the market did not go quite as high. It is not hard to see how alfalfa is worth $10 per ton in this combination of stock, grain and alfalfa farming.

The essential part is to keep the stock growing all the time, for it won't pay to keep a beef cow if it takes three or four years on good land before her calf is ready for the block, and the steer himself eats too much feed in the course of three winters and three summers. Mr. Stimmel is figuring on ultimately using a little grain in the feed and forcing the stock ahead a little faster so as to market them at a year old at 800 pounds or so. The thing can be done and not only save time, but there will be a whole year less feeding to do and the total amount of feed used will be less than at present.

The Holstein Cross.

One of the interesting features of Mr. Stimmel's ideas, and one with an important bearing on dairying methods is the proposition of using Holstein bulls on a lot of the Shorthorn cows for the purpose of developing high-class grade dairy heifers and using the males for baby beef steers. The males have the capacity for beef and the Holstein-Shorthorn (or Durham) cross is a fine one for milk.

The Vina ranch is the owner of one of the best known pure bred Holstein herds of California and young bulls of the finest Holstein blood are always coming along. A bunch of these have been reserved to breed to Durham cows when they reach a breeding age. The Shorthorn is the foundition of American grade dairy cows, as it is and has the capacity for big milk production. The cross thus makes a fine dairy animal.

The Shorthorns on the ranch have been bred for a number of generations from fine bulls and have been raised with plenty feed and good care, so they offer fine opportunities for breeding. With these for dams and first-class Holstein bulls for sires the heifers ought to be very big, vigorous animals and heavy milk producers. The steers might not be worth much on a range with rough picking, but for baby beef along the lines of good care and heavy feeding the Holstein-Shorthorn steer is all right.

The Holstein calf is a big-boned, rangy animal with lots of room to put on meat, though the breed has been developed to need lots of feed that is easily secured. Where the Holstein steer has been put out to rustle he has fallen down in comparison with Shorthorn or Hereford and given the breed a black eye as a beef proposition. Where he has had lots of good feed right at his muzzle he has more than made good. Mr. Stimmel figures, with enough experience to be sure of the facts, that a grade Holstein bull calf, instead of being vealed at six weeks for $10, can be sold at a year weighing 800 pounds for baby beef. At a market of 7 cents there is an advance of $45 or so to pay for care and feeding for about eleven months. You there have an angle to the dairy business that is worth going into. With a big need for dairy stock and for some other way to get rid of alfalfa hay besides feeding it to dairy cows, you have another reason for considering it. However, this is just another phase of the proposition already being worked on the Stanford ranch, the raising of beef cattle on first-class land as a part of grain and alfalfa farming. It has proved a success financially as far as the grain is concerned, as far as the land is concerned, as far as the alfalfa is concerned, and as far as the stock itself is concerned.

JERSEY SALE.

At the W. W. Fisk Jersey sale at Modesto October 14, B. A. Rhoades auctioneer, the sales totaled $6,000 even. The cows averaged $220 each; heifers, $168.35; heifer calves, $86.65, and bulls, $161.40. The interest was great, although the seller, W. W. Fisk, stated that he would have better results if the sale had been held after the opening of the Fair, when more dairymen would have been in attendance. J. G. Fakes of Patterson was the heaviest buyer, others being J. J. de la Meter, Salida; H. G. Pierce, Modesto; P. M. Landsdale, Merced; S. F. Williams, Chico; D. F. Conant, Modesto; F. L. Weston, Lindsay; Rancho Dos Rios, Modesto; P. C. Blessing, Modesto; Frank Wulff, Modesto; A. D. Coolidge, Modesto; J. E. Lewis, Modesto; M. F. Kerr, Modesto, and M. L. Garber, Salida.

A student protesting against boarding-house strategy says, "Boils and roasts are all right in their proper places." We'll bet that he never owned a boil in his life.

Disinfection of public service threshing machines with formalin has been recommended, to prevent the transmission of smut diseases from farm to farm.

A Legal Question

DRIVING OFF STOCK — If parties were driving a bunch of cattle through the country and person's cow, calf, or bull should get out of the pasture, and said parties should drive them off with their stock, say ten or twenty miles, would it be against the law, and could the person owning such cow, calf or bull compel said parties to bring such animal home again?—L. R., Tulare, Cal.

For the strict legal aspects of the case we should advise consulting the District Attorney of your county, or some other attorney, or better say, we would advise steering clear of the law to the best of your ability. The way we figure it up, it is the business of the owner to keep his stock from getting on the public road without an attendant, which puts him in a bad way to do anything legally when his stock do break out. Furthermore, it is very difficult frequently to get stray stock out of a herd of animals being driven along a road, particularly if the herd is a large one, strung out in a long string, or if there are several bands. The best that can be expected is that the men will work the strays out in a reasonable time, letting them find their way back, as they will do. If stock were deliberately driven a long distance, that would be a different matter. The best way to look at such questions is to put yourself in the other fellow's place, or better still, in the place of the judge, if the case ever would come up for decision, and then figure that the judge is likely to make all the allowances possible, for few people are as strict about other people's interest as they might be, or even about their own interests. And after all is said or done, the best thing is to steer clear of all legal trouble. The cost in money and good feeling is far more than any good secured.

DRAFT HORSE SALE.

The California Draft Horse Breeders' Association announces that it most probably will hold a public sale of breeding draft horses at the University Farm at Davis some time during the latter part of January or the first part of February. The entire management of the sale, if held, will be in the hands of the association. Only sound, registered horses will be accepted for sale, but it is not necessary that a person be a member of the association in order to send consignments. Persons wishing to make consignments should communicate with one of the directors, or with J. I. Thompson, secretary, University Farm, Davis, in order that the association may go ahead with plans.

WORM CURE FOR HOGS.

The U. S. Department of Agriculture gives the following formula as a worm cure for hogs, stating that it is used with great success in Kentucky: Santonin, 2 12 grains; Areca nut, 1 dram; calomel, 1 grain; sodium carbonate, 1 dram. This is a sufficient quantity for each 100 pounds of live weight. The dose should be given in slop in the evening, after the hogs have been without food for from 12 to 24 hours. The following morning each hog should receive a tablespoonful of Epsom salts.

By the middle of September this year there were 11,574 persons taking correspondence courses in agriculture with the University of California, started a year before. In the year's work the university sent out 56,672 lessons. The lessons now available are on alfalfa culture, onions, barley, dairy husbandry, swine, poultry, bee-keeping, pear culture, walnut culture, almond culture, grape growing, citrus fruits, olive growing, fig culture, home floriculture, and canning and preserving.

EUROPEAN WAR ATLAS

Free With Your Subscription to Orchard and Farm

George V, Great Britain.

The most appalling war in the history of the civilized world, from a point of human life loss, destruction of property and the impairment of the world's commerce, is now being waged by the European powers. Millions of men have been rushed to the front; thousands have already been killed and wounded in the struggle. Modern war equipment is now being given a practical test. Battleships, cruisers, torpedoes, submarines and air crafts will figure strongly in the conquest.

Nicholas II, Czar of Russia.

Follow the Movements of the Armies and Navies The Big Battles of the War Yet to Be Fought!

With the aid of this Atlas you can locate accurately the countries, cities and bodies of water that are being mentioned daily by your newspapers. This up-to-date Atlas contains a NEW MAP OF EUROPE, showing the changes since the Balkan War; a map of the world and enlarged maps of the different countries at war; also a list of events leading up to the present crisis, an outline of the treaties and alliances existing between the different nations, accurate figures as to the comparative strength of the different armies and navies, pictures of battleships, air crafts, etc., a fine collection of war pictures with portraits of the different rulers, flags of the nations, etc.

Raymond Poincare, President of France.

You and Your Children Need This Atlas in Your Home Now!

Altogether it is a veritable encyclopedia of war history—just what you want to know. Nothing better in print. This Atlas will be given free for a short time with renewal and new subscriptions to ORCHARD AND FARM for one year at 50c or with a three years' subscription at $1.00.

William II, Emperor of Germany.

YOUR CHOICE OF TWO BIG OFFERS

OFFER NO. 1

Orchard and Farm One Year AND WAR ATLAS

50c

USE THIS COUPON

Orchard and Farm,
Hearst Bldg.,
San Francisco, Cal.

Gentlemen: Enclosed find $_____ in payment of_____year's subscription to ORCHARD AND FARM. I accept offer No._____

Name _____

P. O._____R. F. D._____State_____

Good for new or renewal subscription in the U. S. only.

New or renewal_____

BE SURE TO ORDER BY NUMBER.

OFFER NO. 2

Orchard and Farm Three Years AND WAR ATLAS

$1.00

The Dairy Gathering at Modesto

(Continued from Page Two.)

a plan could be inaugurated, the National Breed Associations would take hold and in a few years this show would be self-supporting.

The enthusiasm shown at Modesto last week was more than is usual at the State Fair. In fact, the crowd,

Grand Champion Ayrshire Bull, Moonstone of Steybrae.

the day Professor True judged, was larger than the State Fair puts up.

Exhibitors.

The exhibitors at the Dairy Show were as follows:

Holsteins—J. W. Benoit, Modesto; H. E. Cornwell, Modesto; C. L. Morse, Modesto; G. W. Bashor, Luther D. Thompson, Modesto; Modesto; A. B. Kendall, Modesto; H. R. Pelanda, Salida; H. B. Cowan, Modesto.

Jerseys—Guy H. Miller, Modesto; B. E. Watson, Modesto; C. D. Hayworth, Modesto; T. W. Cheney, Turlock; D. F. Conant, Modesto; J. M. Bomberger, Modesto; F. W. Elleby, Modesto; Fred B. Wulff, Modesto; S. T. Williams, Chico; W. H. Brink, Modesto; J. J. de la Mater, Salida; W. Fisk, Davis.

Ayrshires—E. B. McFarland, San Mateo.

Dutch Belted—Ulysses G. Strader, Ceres.

Guernseys—O. V. Wilson.

Following are the awards made at the Dairy Show, Prof. Gordon H. True, doing the judging:

Holsteins.

Aged Bulls—1, King Pontiac Ruby Burke, A. B. Kendall; 2, Acme Pontiac, J. W. Benoit. Two-year-olds — Sir Jessie Fobes Piebe Burke, G. W. Bashor. One-year-olds—1, Merci Hengerveld de Kol, J. B. Pelanda; 2, Prince Teake Lyons Cloverdale. Senior calf —1, El Prado Wayne Colantha, J. W. Benoit; 2, Ciruela Mike, F. D. Thompson. Junior calf—Wayne Barnum of Riverside, J. W. Benoit. Senior champion bull—Sir Jessie Fobes Piebe Burke, G. W. Bashor. Junior champion bull—Merci Hengerveld de Kol, J. B. Pelanda.

Aged cows — 1, Ciruela Hermana Mechtilde, H. E. Cornwell; 2, Koroba Electra, J. W. Benoit; 3, Avondare Cloverdale III, J. W. Benoit. Three-year-olds—1, Ventcta Electa Netherland, J. W. Benoit; 2, Holly Bee de Kol Korndyke, Benoit. Two-year-olds—1, Ciruela Mald, H. E. Cornwell. Yearlings—1, Sissy Canary Victoria, J. B. Pelanda. Senior heifer calves—1, Teake Lyons Contenta, H. B. Cowan; 2, J. W. Benoit. Junior heifer calves—1, Hermana Mechtilde Ciruela IV, H. E. Cornwell. Senior and grand champion cow —Ciruela Hermana Mechtilde, Cornwell. Junior champion cow—Teake Lyons Contenta, H. B. Cowan.

Jerseys.

Aged bulls—1, Altama Interest, Guy H. Miller. Two-year-olds—1, Owl of Bellevue, Fred B. Wulff; 2, Pansy Gertie Lad, D. F. Conant; 3, Silver Marquis, W. Fisk. One-year-olds—Lorna's Altama Interest, C. D. Hayworth; 2, Mella Ann's Butter Boy Jr., Rancho Dos Rios; 3, Olga Anna's Fox, T. W. Cheney. Senior bull calves—1, Noble's Golden Laddie, J. M. Bomberger; 2, Victoria's Lad, D. F. Conant; 3, Imaritas Pogis, Rancho Dos Rios. Junior bull calves—1, Fantinas Dron, Rancho Dos Rios; 2, Zella Rioter, F. W. Elleby; 3, Nymph's Owl, W. Fisk. Senior and grand champion bull—Altama Interest, Guy H. Miller. Junior champion—Lorna's Altama Interest, C. D. Hayworth.

Aged cows—Victor's Lady Dolly, D. F. Conant; 2, Lorna of Venadera, Guy H. Miller; 3, Loretta of Venadera, Miller. Three-year-olds—Marie's Lady, C. D. Hayworth. Two-year-olds—Gladys of Venadera, Guy H. Miller; 2, Damosella, Rancho Dos Rios. One-year-olds—Astrea of Venadera, Guy H. Miller; 2, Porilla, Rancho Dos Rios; 3, Yvonne of Venadera, Miller. Senior heifer calves—Fantina's Dron, Rancho Dos Rios; 2, Constantia of Venadera, Guy H. Miller; 3, Golden Lucy, J. F. Williams.

Aged herd—Guy H. Miller, Modesto. Young and calf herd—Rancho Dos Rios. Senior and grand champion cow —Victor's Lady Dolly, D. F. Conant. Junior champion cow—Astrea of Venadera, Guy H. Miller.

Guernseys.

Junior champion female — Missie Boy's Lady of the Fargetts (one year old), O. V. Wilson.

Ayrshires.

Senior bull calves—First and second, E. B. Macfarland. Junior bull calf—First, E. B. Macfarland. Junior champion bull—E. B. Macfarland.

Dutch Belted

Aged bull—Hepsey's Hummer. Two-year-old—Imperator. Aged cow—Princess Elaine. Two-year-old—Panama. Champion bull—Imperator. Champion cow—Princess Elaine. All owned by Ulysses G. Strader, Ceres.

Sweepstakes.

Best bull of any breed owned in Stanislaus county—Altama Interest, Guy H. Miller. Best cow of any breed owned in Stanislaus county—Ciruela Hermana Mechthilde, H. E. Cornwell.

Utility herd, comprising five cows in milk open to all breeds—Jerseys, Guy H. Miller.

DAIRY GATHERING AT MODESTO.

(Continued from Page Three.)

S. A W. Carver of Los Angeles, secretary.

The Jersey breeders held a banquet and meeting at Modesto at the time of the dairy show and took action regarding the Jersey show herd at the Exposition next year.

The Guernsey breeders also met and organized the California Guernsey Club, putting this rapidly advancing dairy breed officially in the field in California. Of this club, W. H. Saylor of San Francisco was elected president; C. S. Rasmussen of Loleta, vice president, and D. O. Brant of Los Angeles, secretary and treasurer.

"THE PROBLEM OF GETTING STARTED."

(Continued from Page 9.)

home. Such a ranch is one to retire on, so to speak, not a ranch to make money on, and not a ranch to loaf on either.

Possibly you could get ten acres, work around to keep the pot boiling and develop it by degrees to the condition named. Possibly you could rent a place on a cash basis, a share basis, or in return for developing a place you could secure a part of it. You have a job ahead of you, but with brains, good health, a capacity for getting things done, and fair strength and endurance you could probably make a go of it. The first thing is to get out on the land to see what the work is, what is required, and just where you can get a start.

The job of advising or explaining is so big that it is hard to tell where to begin or to end. Will some one accept your correspondent's invitation to make suggestions not given here or likely to be misleading? There are hundreds of others thinking and planning just the thing that this man is planning, though most have more capital, and it is one of the biggest problems of our time to have them succeed in their undertakings.

Bring the colts to the stables during the day while the flies are so vicious.

The wear and tear on animals in fighting flies is a senseless loss.

Hog Raising on an Alfalfa Dairy

By C. N. Odell.

After a number of years of personal experience on a dairy farm in the Middle West, and the past six years in the San Joaquin valley on a dairy and alfalfa ranch, it is hard for me to understand why more attention is not paid to the swine business.

There it was about half and half, and here about 95 per cent cow and 5 per cent hog. Why this difference? We had the corn there, it is true; but we also lacked alfalfa, which is second only to corn and which we have here in abundance.

Naturally, being interested in the hog as a money-maker, I tried to figure out why we did not raise more hogs on our ranches, learning as I did that most of our pork was shipped from the East. I concluded that people, as a general thing, are one-eyed, so to speak, and that the dairy cow was bringing them more than they were accustomed to, so they were content to take that as their business and say, as a majority of them are yet saying, that "all that I get out of those hogs is side money." They perhaps bought some weaned pigs of uncertain breeding and fed them skim milk, which they did not consider of much value, and at the end of four or five months sold them for perhaps $10 each and were content.

But conditions have changed and land values are rising, as they will continue to do until we are forced to place farming on the business basis that it deserves and every department is making a profit according to the particular place that product occupies in the commercial world and its economical production on the farm. So, in considering the hog on the farm and alfalfa ranch, one finds that his place has been sadly neglected on most ranches of this kind.

I recently noted the statement in one of our valuable dairy papers that "the lucrative price of nine and one-half cents per pound has failed as an inducement to supply enough hogs for the market."

We cannot expect to get much out of a thing without putting something into it and likewise will not realize as much from a thing that we do not konw the value of as from one that we do. So it is with the skim milk on the dairy farm, which should be rated as worth considerable money during the year if fed intelligently to hogs; if combined with other feeds that will supply the needed ingredients without the great waste that is sure to occur from an improperly balanced ration. For instance: Barley is not selling for more than $20 per ton, retail. When we consider its adaptability as a hog feed, especially when fed with skim milk and alfalfa, both of which are rich in protein, we find that it supplies the carbohydrates very cheaply, thereby producing pork at less per pound than it can be produced by skim milk alone, even though we have to buy the barley and pay a little cash out. Any business man considers it good business if he can handle goods at a profit.

Then we should consider the breeding and care of these money-makers, for if we are to make a business of it we must get down to business and do some thinking. It is considered that the man contributes at least 60 per cent of the success of the business, so let us let the hog pay for the feed and call the 60 per cent which rightfully belong to us profit, and we can do this by breeding right, feeding right and caring for our stock. By breeding right, I mean to select the breed that suits you best, and follow a rigid selection of sows as to size, conformation, disposition, suckling qualities, etc.

The herd boar should be a registered animal with the best pedigree obtainable and possess individuality withal.

The most important time in the care of pigs is between farrowing time and weaning. If the dam is in good condition at farrowing and has had plenty of exercise and a ration consisting of skim milk and alfalfa pasturage, and a little grain, especially with young sows, farrowing troubles will be reduced to a minimum. Keep service dates so that you will be sure to have the sow shut away by herself in a comfortable place, and watch her very closely about the time that you expect her to farrow and for a day of two afterward. Keep her shut up by herself for at least two weeks to avoid getting the little pigs hurt and robbed by the larger pigs. Have sows farrow to suit your particular needs, but avoid as much as possible having pigs come in the hottest and coldest months, and by following the motto of an eastern swine journal, namely "Better swine on every farm," we will very materially increase our profits and place the hog on a basis on the dairy farm second only to the greatest of human food producers, the cow.

[The above is taken from a booklet just issued by the California Swine Breeders' Association, which contains a great amount of valuable information on pork production. Copies may be had, we presume, on request to Professor J. I. Thompson, secretary University Farm, Davis, Cal.—Editor.

The United States Department of Agriculture states that the present is an excellent time for American creameries to begin the manufacture of types of cheeses imported before the war in large quantities from Europe. It is stated that American-made cheese has already driven out much European cheese from American markets and other kinds as well can be made and sold without difficulty.

Volney H. Craig of Los Angeles, who operates the large Mathewson ranch at San Fernando, has decided to go into the Duroc-Jersey hog business. He has purchased twenty registered Duroc-Jerseys for this ranch. It seems the Duroc are fast coming to their own in California.

To the baseball fan an error is inhuman, a home run divine.

A rose by any other name would have just as many bugs on it.

IRIS A dark blue iris (Germanica), splendid for massing, growing under trees, etc. $2 per 100, $15 per 1,000, while they last.

The Dean Iris Gardens, Moneta, Cal.

BERKSHIRE HOGS FOR SALE

10 Sows and 6 Boars

Ages 5½ to 13 Months.

In Good Condition and True to Type.

PRICES REASONABLE

For Particulars Address

HOPLAND STOCK FARM, Hopland, Cal.

Lessons in Citrus Culture

By Prof. Elmore Chase, Fair Oaks.

At the Thirty-seventh Fruit Growers' Convention, held at Pomona in 1910, the leading subject for discussion was the general decadence of orange production in the older groves. The writer was directed to investigate the subsoils in the foothill valleys of Central California and to prepare a paper to be read before the convention. The instructions were to investigate, not infertile, but inert subsoils. Such an investigation was given in a very limited way, and a paper read before the convention with the leading thought that California soils and the subsoils were not only fertile, but exceedingly rich in plant food, and that in order to secure an increasing productivity for an indefinite period, there must be a most thorough preparation of the soil before planting, with the view of giving larger root room for the storage of a larger amount of plant food, and at the same time making available the natural soil fertility. This address received a vote of thanks from the convention. Since that time the writer has been investigating more carefully the soil conditions in the Sacramento Valley and studying methods of the preparation of these soils with the view of increasing the yield per tree. The burden of this series of papers will be, (a) how to treat our obdurate soils in preparation for planting citrus groves; (b) the cultural methods applied to the groves, and (c) how to treat some of the problems which every newcomer must encounter.

The Orange Tree.

It is very important in the cultivation of any class of fruit trees to have a good knowledge of the habits of that tree and to understand something of the peculiarities in growth, and of its liability to diseases. Of citrus trees this knowledge is of especial importance, and one of the first things to take into consideration in selecting soils for its growth and for its production.

The first and most important thing is the free circulation of water in every part of the tree. This water carries with it the materials of growth both for wood and fruit in the form of food, which it dissolves out of the soil. When plenty of moisture is available, a large amount of plant food is carried to every part of the tree, giving a growth almost unlimited. This feature of the tree is of very great importance when one selects soil and directs the culture of that soil for an orange tree, in order to secure for it a uniform supply of moisture and food, for in this connection another important factor must be noted.

When an orange tree has suffered for lack of materials for growth to any very great degree, it ceases to grow, and when it is supplied with abundance of food, it shows a wonderful new growth at once from root to branch. If it is quick to suffer from lack of moisture, it is equally quick to start its new growth; but the striking phase of this new growth is not like that of any other tree. Most fruit trees, when their growth has been arrested for any cause, when they resume their activity, start from the point where they stopped, and proceed to complete their growth. Not so with the orange tree. It starts an entirely new growth throughout its whole structure and not infrequently drops its fruit to the ground and starts a new crop.

Another feature in this connection is that unlike other trees, it has no annual growth. It has four or five periods of growth in one season and these periods are modified by methods of culture.

A fourth peculiarity which must never be overlooked in selecting soil for an orange grove is its habit of issuing gum. Recent investigations have added great importance to this peculiar feature.

Another feature of some importance which may have considerable value in its care, is that its fruit does not grow from an embryo, but is produced asexually, and its growth is purely a vegetable growth like that of the leaf. This pertains only to the seedless variety. None of these features can be overlooked and especial attention is called to them.

There is another feature which has not yet been fully investigated. It is the relation of the root hairs in connection with the soil conditions. It is generally understood with trees with an annual growth, especially deciduous ones, that the root hairs are deciduous with the leaves, and the trees have a distinct period of rest. The question may be properly asked, how may the orange tree be influenced by its different periods of growth in its relation to the varying soil conditions?

While these peculiar features of the navel orange tree are not new to the scientific investigator, many a grower seems to forget that this tree is not like all other trees, and hence requires in many cases a different treatment of the soil, and especially, a greater preparation for planting. Having now a clear conception of the tree we are to grow and make bring forth fruit in abundance, the next step is the selection of soil.

Orange Soil.

This valley has more orange climate than orange soil; but since the orange tree thrives well on a great variety of soil and accepts as its home a diversity of soil conditions, there is no lack of good selection for planting orange groves sufficient to keep up with the demands for this class of productions for the present and for a long time to come.

The first consideration is the topography. A level tract less than fifty fet above sea level is to be rejected for many reasons, most important of which are lack of water and air drainage. Such is the character of soils at this level there can be no subsoil drainage.

Surface drainage is very difficult. Water from the winter rains remains on the surface so late in the season that the tree can not do its best. Such soils with a preparation by the use of dynamite, subsoil plowing and the introduction of humus will give a very satisfactory growth for several years, subject, however, to frost injury to which lack of air drainage renders them liable. By the use of frost protection even this danger can be eliminated; but the fact remains that while these groves thus placed may thrive for a few years, they generally go into decadence for the want of the conditions necessary for prolonged production. Even if with the right kind of cultivation the fruitage can be produced, the production will not be a financial success, because of the cost. Such lower lands usually have shallow soil underlaid with the inert obdurate subsoils which make the cost of bringing them into activity too great for profitable production. Such lands can better be put to other uses.

In selecting rolling surfaces and higher ground the orange grove in this valley is free from frost injury. There is a constant flow of the cooler air from the elevations to the lower draws during a still, cold night, which serves to keep the higher places several degrees warmer than in the flowing currents running down the ravine like invisible streams of water. These gentle slopes also drain the surplus moisture during the rainy season and permit the early cultivation of the soil. Then, too, the character of these soils, being loamy soils, with less clay, furnish easier tillage and a more ready aeration.

Even gently sloping soils which may be good soil for orange trees needs to be examined as to the impervious substrata, for excessive moisture during the latter part of the rainy season may gradually reach the impervious stratum and furnish a flow of water to the lower level and prolong the saturation of the soil at the lower edge of the slope. This will make the conditions perfect for the gummosis of the orange tree and cause great loss.

The examination of soils prior to planting will enable the grower to save himself from the loss of trees just as they are ready to give fruitage.

(To Be Continued.)

THE RIVERSIDE FAIR.

To "Orchard and Farm"—The Riverside County Fair was a great success—everything was arranged so nicely.

There was the most beautiful pigeons I ever saw, lots of chickens, quite a large number of them being beautiful Rhode Island Reds, and they certainly were beautiful.

Rabbits are creating a great deal of interest just now, and the showing was very fine, 139 entries, which shows that a good many people are going into the fancy as well as for market. There were all kinds and all sizes.

The horses and cattle were very handsome. They have a splendid race track at the fair grounds, and the Riverside people deserve a lot of credit, for this is only their second year for a county fair. Everybody was so courteous and kind. I did not hear one little wrangle in the two days I was there. All seemed so happy and had such a good time. There was racing, trotting, driving, side shows, needlework, art exhibits, agricultural exhibits and a balloon. Three cheers for the Riverside County Fair!—MRS. C. A. RICHEY, Los Angeles.

The International Irrigation Congress in a recent meeting at Calgary passed a resolution favoring their union with the International Dry Farming Congress. They also favored the turning over of the control of U. S. reclamation projects to the settlers. The publicity bureau of the Congress states that the Congress is very likely to come to California in 1915.

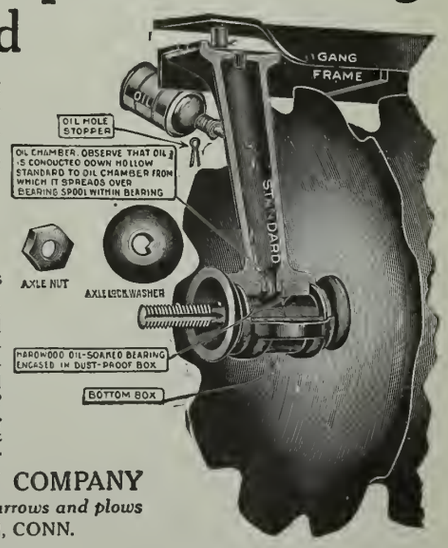
Russia has 28,500 farmers' co-operative societies. In desolate Siberia there are 2,500 co-operative creameries.

The right will triumph in the end, but keep your hen house locked, my friend.

A New Dust-proof Bearing Perfectly Oiled

Here is an improvement that tells in still another way of durability, efficiency and light draft found in the

Cutaway (CLARK) Disk Harrows and Plows



The illustration in this announcement shows how our hardwood oil-soaked bearings are now encased in metal dust-proof boxes; and how the oil is conducted inside of the bearings. Could it be simpler? Could it be improved?

Ask your dealer to show you a CUTAWAY (CLARK) disk harrow or plow. If he doesn't handle them, write us at once for free catalog.

THE CUTAWAY HARROW COMPANY
Maker of the original CLARK disk harrows and plows
996 MAIN ST., HIGGANUM, CONN.

Dates of Prominent Agricultural Fairs and Shows for Fall and Winter 1914

Nov. 9th-Nov. 14th—Arizona State Fair, Phoenix, Ariz.

Nov. 28th-Dec. 5th—International Live Stock Exp., Chicago, Ill.

Dec. 7th-Dec. 12th—Pacific International Live Stock Exp., North Portland, Ore.

For further particulars address the secretary of any of the above meetings at the address given.

Value of a Pure Bred Dairy Sire

By W. M. Carruthers

A few poor cows may do little permanent harm to the dairy herd, but a poor sire will do untold damage. Frequently dairymen hold the penny so close t othe eye it is impossible to see the dollar a little farther off, and this is just what a man is doing who has a good dairy herd of grade cows and thinks he is economizing by buying a poor or even common sire.

If the good purebred sire improves the milking capacity of his daughters only one and one-half pounds of milk at a milking, above the production of their dams, this would mean an increase of 900 pounds of milk for the ten months or 300 days an ordinary cow should give milk. The daughter would also be a much more persistent milker, that is, would give milk for a longer time in the year, and she would regain her flow of milk better after an unavoidable shortage of feed, as in a summer drouth. These daughters may certainly be credited with 1,000 pounds more milk per year than their dams produced. At the low estimate of $1 per 100 pounds this extra amount of milk would be worth $10 per year.

The average cow is a good producer for at least six years, or until she is eight years old. It will on the average be four years after purchasing the sire before his first daughters will have brought in the first extra $10. Eight dollars and twenty-three cents kept at compound interest for these four years at 5 per cent will equal $10, so the daughter's improvement or increase of income the first year is worth $8.23 at the time her sire is purchased. The cash value of the daughter's improvement (inherited from the sire) figured in the same way for each of the last six years she gives milk is shown in the following table:

Improvement first year	$ 8.23
Improvement second year	7.83
Improvement third year	7.46
Improvement fourth year	7.11
Improvement fifth year	6.77
Improvement sixth year	6.45
Improvement for six years	$43.85

The total increased income of a cow over her dam by having a good sire is therefore $43.85.

In an ordinary dairy herd of thirty-five to forty cows an average of seventeeen heifers per year should be obtained, and twelve of these would be worth raising, making it easily possible for a bull to earn twelve times $43.85 or $526 per year. This would amount to $1,578 in the three years that a bull is ordinarily kept in service.

Cost of providing every heifer one good parent:

	Scrub.	Pure-bred.
Cost of sire	$ 30.00	$150.00
Interest, 3 years, 5%	4.50	22.50
Cost of keeping 3 years	100.00	100.00
Risk, 3 years	10.00	50.00
Total expenses, 3 years	$144.50	$322.50
Value at end of 3 years	30.00	100.00
	$114.50	$222.50
		$144.50
Extra cost good sire, 3 years		$108.00
Extra cost good sire, 1 year		36.00
Extra cost, 1 daughter		3.00

Considering the male calves as worth no more than if sired by a scrub, it would then cost $36 to provide one good, purebred parent for the twelve heifer calves which are raised each year, or $3 per heifer. Where else can such an investment be found? Three dollars expended brings in an average return of over $7 per year for six years, or $43.85 in all. This makes a clear addition of $43.85 to the income of each daughter, or a net profit of $40.85 and of $1,470 for thirty-six daughters in the three years. Here is nearly 1,000 per cent profit on the investment. The original cost of the good sire looks very small beside the $1,470. It really pays as nothing else on the farm pays, to put $150 into the right kind of a dairy sire that will return practically ten times $150, within three years.

An examination of details will show these estimates to be conservative. There is plenty of margin left for failures and unfavorable conditions.

One thousand pounds of milk per year is a conservative estimate of the improvement of the daughter's production to credit to a good sire, but the details of figuring it may be varied to suit conditions in different herds and different localities. One hundred and forty dollars is certainly a liberal allowance for the purchase of a purebred sire, and results here named are based upon having a first-class animal at the head of a herd. A herd of only thirty-five or forty cows is taken for illustration, while a vigorous sire, properly fed and exercised, is sufficient for a herd of forty-five to fifty cows, provided he is not allowed to run with them. There is another distinct improvement of the good sire's daughter besides her milk production; it is the improvement of her blood or breeding, as the result of which her daughters will be better milk producers. This blood improvement of all the daughters accumulated through a series of years means a remarkable increase in the efficiency of the herd.

It is the common experience of all dairymen who have used a really good improved dairy sire that the investment had made them royal returns. The $150 cost price looks "too big" only to the narrow vision that cannot see the natural improvement of the herd certain to follow. Many a dairyman might have reason to say that he cannot afford to pay a big price for a fine cow, but the same argument does not apply at all to the purchase of an improved bull, because the sire's influence spreads so much farther and faster than that of the cow.

If the heifer calves are to be raised for dairy cows there is absolutely no business reason on earth for keeping a scrub bull. The dairymen who think there is, pay a heavy price annually for maintaining that tradition. The scrub bull is the most expensive and extravagant piece of cattle flesh on the farm. He does not stop at being merely worthless, but will lose the farmer the price of two or three good bulls every year he is kept. The dairyman could not afford to keep a scrub bull if the animal were given to him, if he were paid for boarding the beast and given a premium of $100 per year for using him. The presence of the scrub in so many California herds—many times without a single qualification except that he is a male—is an offence and disgrace to the dairy business and a plain advertisement of the dairyman's thoughtless bid for failure. The only thing on earth the scrub sire is good for is sausage, and it is high time that this plain and simple truth were given practical acceptance on every dairy farm.

By all means get a good dairy sire if you have to sell two or three cows to do it. The improved sire is, without question, the most economical investment in any dairy herd.

The United States Department of Agriculture has issued a bulletin on "Concrete Lining as Applied to Irrigation Canals." It is figured that in the West fully 25 per cent of the water taken from rivers is lost by seepage, an immense amount of which could be saved by the use of concrete lining. As breakage would also be largely prevented, there would be a big saving that way. The bulletin is more for engineers than for the average reader.

Don't allow the hogs to sleep in or around the stable stalls, unless you want fleas in the barn.

Don't Feed Butter Fat to the Hogs

To get every ounce of butter fat from your milk, the bowl of your separator must spin swiftly and smoothly. This requires a special oil. The oils you use on your other farm machinery are not suited to the delicate, high speed mechanism of the separator.

Standard Hand Separator Oil

is of just the right body to quickly reach those finely adjusted, close fitting bearings. That is why it will give you perfect lubrication. If a better separator oil could be made, we would make it. Dealers everywhere.

Standard Oil Company
(California)

DUNHAM-McLAUGHLIN COMPANY
OAKLAND, CAL. WAYNE, ILL.

PERCHERONS

At the GREAT CALIFORNIA STATE FAIR last month we WON every FIRST PRIZE competed for; also won CHAMPIONSHIP FOR BEST STALLION any age; also Premier Honors for the best group of five stallions any age.

The unprecedented success of our business is due to the extraordinary quality of our stock; careful, conservative management and perfect fulfillment of our obligations.

STABLES: EMERYVILLE RACE TRACK
OAKLAND, CAL.

DUNHAM-McLAUGHLIN CO.

Needed--An Annual Dairy Show

To ORCHARD AND FARM:—The gratifying success of the recent dairy show given by the people of Modesto and Stanislaus county in connection with the annual meetings of the California State Dairy Association, the California Creamery Operators' Association and the California Creamery Managers' Association suggests to my mind the unusual opportunity now open to Modesto to do for herself and for Stanislaus county a great thing and secure for her the fixed position for all time as the dairy center of the great State of California.

It is manifest that all dairy organizations must hold their annual meetings next year on the Exposition grounds at San Francisco, but for later meetings no arrangements have been made as yet, although there is a very strong feeling among the dairymen of the State that we should follow the example of such great dairy States as Iowa, Minnesota, Wisconsin and Illinois by holding their annual conventions in connection with a great dairy show. In order that this may be done successfully it is necessary that the show must be the best of its kind in the State for that year. The most notable example of such a dairy show is found in Iowa in the case of the Waterloo dairy show. So well has the Waterloo dairy show been managed that to-day it ranks higher and commands wider attention and is given greater credit than the Iowa State Fair itself, so far as the dairy exhibits are concerned. This has all been brought about by two things.

First, the enterprise of the people and dairymen of Waterloo, Iowa, in providing large and well equipped dairy pavilion and grounds; and, second, in undertaking to finance and manage each year a great dairy show in connection with the annual meetings of the Iowa State Dairy Association, with the dates arranged so as to follow immediately after the Iowa State Fair, thus forming one of the links in the circuit of great dairy fairs and shows in the Northwest, consisting of Wisconsin, Minnesota, Iowa and Waterloo, and then the National Show at Chicago.

In order to give the Iowa State Dairy Association and the dairymen of the whole State of Iowa a keen and lively interest in both the show and its own annual meetings the dairy show is held nominally under the auspices of the State Dairy Association, but actually under the management of the Waterloo people and dairymen. An admission fee is charged and the total receipts of the show are turned over to the Iowa State Dairy Association and this constitutes practically the only funds on which the State Dairy Association depends for its maintenance and operation.

Of course, in order to do this the people of Waterloo must provide in other ways for the expense of the show, but when you consider the enormous benefit that has come to that community as a result of these shows and meetings it has proven to be the best investment ever made by Waterloo or its people. I am sure that Modesto and Stanislaus county could never make a better investment than to emulate the example of Waterloo, Iowa. There would be plenty of time to do so through the ensuing two years so as to be ready for the convention and shows of 1916.

There is a widespread feeling among the dairymen of the State that the California State Dairy Association should have a fixed and permanent meeting place where the educating opportunities of a fine livestock and dairy exhibit or show would be available; and there has been much talk that this fixed place and time of meeting should be at or near Sacramento during the week of the State Fair. Some have suggested that the meetings be held at Davis on the premises of the Agricultural College and Dairy School, and during the same week as the State Fair. As Davis is only a few minutes' ride out from Sacramento, this would appear to be entirely feasible.

However, the question is now open and Modesto and Stanislaus county have an opportunity to do themselves proud and to establish themselves for all time upon a permanent pedestal so conspicuously above every other community of the State that the opportunity should be grasped without a moment's hesitation and at whatever cost.

A proper date for this show would be the week following the State Fair, so as to form a circuit on the Pacific Coast in conjunction with the California State Fair and if possible also the Washington and Oregon State Fairs.

We believe your paper would do the people of California a great service by putting this idea strongly before them. —S. A. W. CARVER, Los Angeles, California.

HOG SUCCESS WITHOUT MILK

A fairly common idea in California that hogs and skim milk are inseparable and that without milk it is unprofitable to try to raise hogs was left with rather scant support by the results secured in the Berkshire awards at the State Fair by F. W. White of Elk Grove, a new exhibitor. His hogs received a championship, three firsts, and several other minor awards, only one other exhibitor among the Berkshire men receiving better recognition, that being A. B. Humphrey of Mayhews. The thing is worth speaking of because the hogs are raised merely on alfalfa and grain and do not have the skim milk which most farmers appear to think necessary, also because White is a new breeder and his stock is mostly California bred stock and not purchased at fancy prices from Eastern breeders.

Mr. White started his swine herd three years ago on rented land and this September was the first time he showed at the Fair. The stock is kept on alfalfa pasture almost continually, but is fed heavily as well on barley or middlings. At a rough estimate Mr. White states that the alfalfa amounts to approximately one-third of their ration.

Two weeks after farrowing the sow and litter is put on alfalfa pasture, acre fields being used and several sows and litters being kept in the same field. They are also fed as much barley or middlings as they will eat, although the alfalfa cuts down the amount of grain that is required considerably. Less hogs are run on the alfalfa on the place than the fields would keep. They stay on one field about two weeks, when they are taken off and put on another and the first field is irrigated. Then in two weeks more they are put back on the first field and the other is irrigated. The two fields, Mr. White says, could supply, perhaps, 10 sows with alfalfa pasture on the system he uses. Besides the cheapness of the alfalfa it makes the pigs grow faster than they could otherwise and makes fine, large boned hogs. It amply demonstrates the effectiveness of alfalfa and grain even without skim milk, for successful swine raising.

HOG BULLETINS.

The University of Illinois Agricultural Experiment Station has published a series of bulletins on the quantities of the various nutrients needed by growing pigs. The bulletins appear to have more scientific than practical value, but might be found interesting to persons going deeply into the theory of swine feeding and nutrition. The bulletins tell of the forms of nitrogen, also of the phosphorus and ash content of growing pigs, coefficients of digestibility of some common rations for swine and a study of the development of growing pigs with special reference to the influence of the quantity of protein consumed. There is also a bulletin on the digestibility of rations for steers. The swine experiments show among other things that hogs with an excess of protein, such as would occur with a heavy alfalfa and skim milk ration, have "more blood, larger vital organs and larger, stronger bones of a higher ash content than those fed a ration, the nutritive ratio of which is wide," such as a ration composed largely of corn or barley. This would appear to indicate very favorable conditions for hog raising in alfalfa districts, especially when sufficient grain is fed as well as alfalfa and milk.

LIVE STOCK NEWS NOTES.

The Strader herd of Dutch Belted cattle which are maintained at Ceres, recently shipped two bull calves to Nicaragua, Central America. Mr. Strader states that he has made many shipments the last two years to foreign points. This breed of cattle seems to be gaining in popularity more and more every year, there being now six or seven herds of this breed in Stanislaus county.

The Pacific Coast has several times sent livestock East to the National shows and have come back carrying the championship ribbon. Just recently a herd of Guernseys from Arizona have been taking in some of the Eastern State fairs. A Guernsey cow from this herd has been made Grand Champion every time she is shown at the Eastern fairs.

E. B. McFarland of San Mateo, who breeds Ayrshire cattle and Berkshire hogs, recently shipped to O. Nelson, Vacaville, a young Ayrshire bull. This young bull is from one of his Canadian-bred cows and will no doubt be a valuable addition to the herd he goes to.

KIRKMAN'S
RELIABLE TREES
Trees that grow and bear true to name. Now booking orders for next season. Write us now about what you will want.
Kirkman Nurseries
2027 Tulare St., Fresno, Cal.

Costs Only $30 Freight Paid
One Man Stump Puller
One man does the work—no horses needed. Weight 90 pounds. You can clear half an acre a day. Send for folder. Live agents wanted.
W. E. MORRISON, Dept. I.
821 Riverside Ave. Spokane, Wash.

NASH BROS.
TIPTON, INDIANA
BREEDERS OF DORSET SHEEP

BREEDER OF CHEVIOT SHEEP
GEORGE PARNELL WINGATE, INDIANA

QUALITY
BERKSHIRES
OUR BERKSHIRES ARE NOW BETTER THAN EVER.
They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.
Send for Catalog.
Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

HOPLAND STOCK FARM
Registered Shorthorns, Shropshire Sheep, Berkshire Hogs, Holstein-Friesian Cattle, Hungarian Ponies, Poultry.
HOPLAND, CAL.

SHOES AT WHOLESALE PRICES!
Big Value $1.37
Delivery Free
Get our BIG CATALOGUE of Merchandise—Hundreds of BARGAINS listed. Girls' School Shoes Made of black box calfskin; wide toes, with tips; made for comfort; tough, durable soles, made of the best sole leather obtainable. Sizes 6 to 8, $1.37; 8½ to 11, $1.73; 11½ to 2, $1.93. Ladies' sizes, 2½ to 6, $2.23. We can give you hundreds of similar bargains in every line of merchandise.
SEND FOR BIG FREE CATALOG!!
"We Absolutely Guarantee Satisfaction" with every purchase or your money cheerfully refunded. Musical Instruments of All Kinds Sold on Easy Payment Plan.
W. B. GEISER & CO.
Mail Order Specialists, Established 21 Years,
558½ Market Street, San Francisco, Cal.

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searches and Big List of Inventions Wanted FREE
Watson E. Coleman, Patent Lawyer, Wash., D. C.

War and the Draft Horse Breeds

It is no news that war has sent the prices of horses up with a rush and that it has made a scarcity of horses of all kinds that it will take a number of years to supply. A fact of equal importance to the breeder is the effect that it has had, is having, and will have, on the different breeds.

Already the Belgian breed has received a blow from which it is doubtful it can ever recover. The home of this breed is in one small country, and although fine animals of the breed are found all over the world, these few exceptions are stallions, and without Belgium to draw upon the Belgian horse would soon practically disappear. The fact that the Germans have so quickly over-run almost all Belgium has given little chance to remove or protect the fine breeding stock. Doubtless many of the most valuable animals might have been removed from the seat of war if time had permitted, which for one thing it did not, and for another no property was too valuable for use if it could help military effectiveness. It goes without saying that every draft horse in territory captured by the Germans was at once seized, also that the Belgians also used every horse available for their army. It is impossible to say how many of these will survive, what proportion of the survivors will be lost and what find their way back to their homes and to the breed registry, or what proportion of the survivors, particularly the mares, would be in a condition for breeding after this war stops, whenever it does stop.

As most of the fighting, outside of Belgium, is thus far in France, the breed next most influenced by the war will be the Percheron, the greatest in numbers and popularity in the world. Every draft horse in France is at the disposal of the government for military purposes, but even so, the Percheron is in less danger than the Belgian, on account of the much greater number to draw upon, if for no other reason, and there are other reasons.

The Percheron breed is heavily subsidized by the French government, which keeps a record of the stallions of the highest quality. Although the war has made an immense demand for draft horses, the government has decided to call for the Percherons of highest quality last of all. First of all will go the draft horses of the cities, then those of the farm, then the breeding stock, and it appears more than unlikely that these will be reduced in numbers more than in a moderate degree at the worst. What will happen is that the breeding stock when the war is over will be engaged for a number of years replenishing the drain made on the work animals by the war, and it is difficult to believe that as heavy importations can be made for a number of years as has been the case up until recently.

The Shires and Clydesdales are still farther removed from the influence of the war and although British cities are said to be seriously depleted of draft horses, according to newspaper reports the proportion of farm horses taken is as yet small. In the homes of all three breeds, Percherons, Shires and Clydesdales (omitting the Belgians, which seems to be too hard hit) the American breeder therefore can figure that there will be some curtailment of breeding stock at least, and such a big demand on that breeding stock after the war is over that there will be little surplus for us to draw upon. The supply of good horses has been small thus far and the war not only is increasing the demand, but decreasing the possibilities of supplying that demand.

Incidentally it can be mentioned that the demand for light horses has also been greatly increased and the source of supply for horses of the highest quality greatly decreased. Some of the finest racing stables of the world were in France for the racing at Paris when the war broke out, and stallions worth tens of thousands of dollars were taken by the government for cavalry purposes, becoming food for powder like common stock. These horses were the possible sires of the finest cavalry horses and the armies of the world can ill afford their loss. The war has not only increased the demand for draft horses and limited the source of supply, but it has done the same for the light horse as well.

THREE CROPS A YEAR.

North of Colusa on the east side of the Sacramento river there is a dairy, operated by B. F. Gould, on which the milk is used on the place for cheese-making. Alfalfa is one of the leading feeds on this place, but other crops are raised for the cows as well, which is good for both cows and land. Last winter barley was grown on part of the land. This was harvested and on June 20 corn was planted and a stave silo erected, the corn being cut off even with the ground and put in the silo early in October. Mr. Gould is planning to irrigate again and to plant carrots, which are one of the finest cow feeds that can be produced. These carrots can be taken off in time to plant another crop of barley.

This is Mr. Gould's first trial of the plan on this place, but he has worked it on other places, so it is no experiment. By this process the land is kept clean of weeds by the two hoed crops, corn and carrots; it has three kinds of plants grown to make a good rotation, and when necessary to change, alfalfa can be put in and other land, possibly enriched by several years of alfalfa, used for the barley, ensilage corn and carrots. This, especially when there is lots of manure from the dairy, is a fine proposition for the cows, fine for the land, and makes the land yield heavily of its riches.

CALF FEEDING METHODS.

Nearly every dairyman finds a good deal of trouble with calves starting to suck one another. If they get hold of an ear, they may get a lot of hair in their stomachs to make trouble, and if they got hold of another calf's teats they do it a big injury, for it is believed that the giving of milk by a young heifer is of much permanent injury in productiveness and vitality as well as appearance.

On the Stanford University Holstein herd at Vina there is no trouble with the calves sucking one another at all, owing to the method of feeding. The calves are fed their milk in stanchions, where, of course, they cannot get to one another. After they have gotten rid of their milk the pails are taken away and a trough with grain put in its place. They get eating this and it dries up the saliva that seems to cause them to want to suck. Then in about a half hour they are let go, they have had all they needed to eat and the last food being dry has removed all idea of sucking. As a result there is no attention needed to keep them from sucking one another and they never even try to do so. The whole method of feed and care has built up an exceptionally fine appearing set of youngsters.

Bean Power Sprayers

"The Bean Is
The Best"

You want a sprayer that will throw the mixture on at the necessary high pressure—a sprayer that will stand the wear and tear of hard service in the field—a sprayer that will last—a sprayer that is easy to operate and does not require constant repairing and adjustment. Then get a "BEAN." Made in five sizes—all very reasonably priced.

Send for Catalog 28-A—Just Issued

It illustrates and describes the entire BEAN line of Hand and Power Sprayers and Pump Accessories, and explains the 21 Distinctive Bean Features; Porcelain-lined Cylinders, Rustless Ball Valves, Underneath Suction, Steel Frames, Pressure Regulator, Bean Patented Cut-off, etc., the result of 27 years' experience.
Get Catalogue 28-B for Centrifugal Pumps; 28-C for Opposed Gas Engines.

THE BEAN IS THE BEST TRADE MARK

BEAN SPRAY PUMP CO.
225 West Julian Street, San Jose, Cal.
Also, Cleveland, Ohio.

From **FRANKLIN K. LANE**
Secretary of the Interior

"I trust the State of California will elect James D. Phelan and thus realize its opportunity to secure a United States Senator who can, with force and dignity, uphold the interests of California and the policies of the President."

JAMES D. PHELAN

JAMES D. PHELAN—three times Mayor of San Francisco.

Prevented renewal of franchise of old Geary street railway, San Francisco, thus making greeent euccesful municipal line possible.

Appointed first woman who ever held an important public position in San Francisco.

Served as regent of the University of California.

Commissioner to secure re-enactment of the Geary Asiatic Exclusion Law.

Commissioner for Hetch Hetchy legislation before Congress to secure a mountain water supply for the cities around San Francisco Bay.

Commissioner to Europe by appointment of President Wilson to support the United States Government's invitation to foreign countries to participate in the Panama-Pacific Exposition.

Secured appropriation of $500,000 for United States building at the Panama-Pacific Exposition.

Declined ambassadorship to one of the great European nations, preferring service at home.

Led in the fight for a new charter for San Francisco, which insured home rule, civil service reform, responsible government and municipal railroads.

Raised standard of pay for laborers in the city employ.

Head of the San Francisco Relief Committee in the disaster of 1906. Appointed by the President custodian of the relief fund aggregating $18,000,000.

Worked and spoke before the Legislature for the enactment of an anti-alien land ownership law.

Experienced, capable and untrammelled, he would have but one client in Washington, the people of his native State.

Elect the man who can help California in Washington

New Method of Alfalfa Irrigation

Leveling land for alfalfa has always been one of the biggest expenses of alfalfa planting. At the same time a poor job of leveling is one of the worst things there is in spoiling some parts of the checks, giving too little water to other parts and letting only a portion grow as alfalfa should grow.

On the Stanford Vina ranch alfalfa is now being grown on land that has not been leveled and is not checked. The cost of leveling is saved and the cost of checking. At the same time the fields are far beyond the average in uniformity of growth and in general appearance. In fact, the alfalfa is in perfect condition all over the field and in addition there is not the waste of land on account of the checks that exists on all alfalfa fields irrigated in the usual way. Not only is the alfalfa in perfect condition and uniform throughout, but every bit is utilized, even in the ditches which convey the alfalfa over the fields.

This method of water distribution was devised by the manager, W. G. Stimmel, and is easily described. The water is conducted over the fields in wide, shallow ditches, about six feet wide and about eight inches or a foot deep, like the rest of the fields seeded to alfalfa, and they are only noticed when the alfalfa is well along by the slight dip in the green surface of the field. The plants there are as large as elsewhere and the mower and rake can go over them without trouble.

The water is turned into these small ditches, which probably is the best word for them, from the main ditch supplying each field and is spread out on either side by means of canvas dams. The irrigator has two dams. With one he stops the water about 50 feet from the intake and it spreads out over the side as far as the slope of the field and the thickness of the alfalfa will take it, sometimes 50 feet, sometimes 50 yards and more. While this is running out he places another dam an equal space below to catch the water when the first dam is removed.

The frequency of these ditches depends upon the lay of the land. Sometimes when there is a good, smooth grade, two may be 50 yards and more apart, other times, and frequently, only 50 feet apart. Naturally, care has to be taken in laying them out. They can only be located by the careful use of the level, but the results certainly do show on the alfalfa fields irrigated in this way. It is not only a question of small expense in fixing the land for irrigation and planting, but of very satisfactory irrigation nad fine growth.

On the first irrigation, when there is little but the bare land, there is difficulty in getting the water on evenly, but after the alfalfa is established it spreads the water out itself and makes an even distribution.

The ditches are very easily made by use of a plow and a disk harrow. It was planned to make them with scrapers and a strip six feet wide was first plowed to loosen up the dirt. Then to pulverize it and get it in condition so that the scrapers could make a good job, the disk was run over it a couple of times, only to find that it had shoved the dirt off to the side and completed the ditches, which required only harrowing to compact them and the fields was ready for planting. For inexpensiveness combined with effectiveness, the proposition is a wonder. Any doubts about the methods or resutls can be settled by a visit to the place, where this has become the standard method of alfalfa irrigation.

Value of Whey As a Stock Feed

Down in Tulare county, where such great success is made on dairy ranches in egg production through the combination of skim milk, alfalfa pasture and other natural advantages, it is the usual custom to feed the fowls the curd of the milk, while the whey is more or less wasted. In theory this looks wasteful and as if a bet was being overlooked somewhere, especially in the combination of whey and alfalfa hay, or, better, ground alfalfa, preferably as a feed for hogs.

The whey is not thought to be very valuable as a rule. There seems to be an idea that most of the feeding value of the skim milk is removed in the curd, an idea that is not founded on fact. The two important materials in skim milk are protein and milk sugar; possibly also the mineral matter would be included, as it is fine for bone building. The protein is in two forms, casein and albumin, of which the casein is most valuable because there is the most of it, a little more than three per cent on a skim milk basis, and about half a per cent of albumin. The casein is removed in the curd, but the albumin remains in the whey and it had better be fed than wasted. Then practically all of the milk sugar, which is very easily digested and of a high food value, remains in the whey with a large proportion of the ash, or mineral matter, so it can be seen that there is too much nutriment in whey to waste.

One of the authorities on dairy products says, "While whey contains less solid matter and proteids (protein is the common way of saying it) than skim milk, it nevertheless has a material feeding value. Experiments have shown that two pounds of whey are about equal in feeding value to one pound of skim milk. In general, ten pounds of whey will produce as much gain in live weight of growing animals as one pound of farm grains." If barley was worth $1 per hundred, this would make 100 pounds of whey worth 10 cents.

It also would appear that for California dairy sections whey should have a special value on account of its chemical composition. Alfalfa is everywhere, and the main fault with alfalfa as a sole food is that it contains too much protein. Skim milk also contains too much protein for the amount of other nutrients, but when you take off the curd, you have whey which contains only about .6 or .7 per cent of protein and nearly ten times as much milk sugar. While the skim milk, when fed with alfalfa, although it has a much higher food value than whey, makes the hog ration have too much protein in proportion to other nutrients, the whey tends to offset the surplus protein in alfalfa and make it nearer a balanced ration. It can therefore be seen that the nature of whey should make it particularly valuable as a California hog feed.

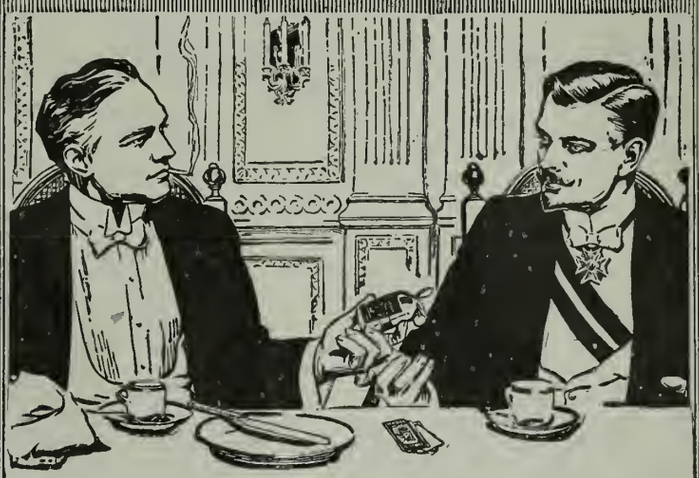
Alfalfa hay as a feed for hogs is usually rather rough and coarse. It would seem as if whey poured over it would be absorbed by the hay, which would be rendered softer and more palatable to the hogs, thus improving it chemically and physically. Of course, if the hay were chopped fine, it would absorb the whey so much quicker, and chopped hay is more valuable than coarse hay too. Some person or persons may be trying this method of using whey from their skim milk after they have removed the curd for the fowls, but if they are not, the theory of the thing is that whey is too valuable a feed to be wasted, and some such method ought to be the right way to use it.—D. J. W.

LOQUATS VALUABLE.

In the Report of the Director, California Agricultural Experiment Station, it is stated that the loquat deserves more consideration than it has been receiving. It has commonly been planted as a dooryard tree for many years, most of the trees being seedlings producing very inferior fruit, which has kept it from the popularity it deserves. All such trees should be top-worked to improved varieties and in the future only budded trees planted. An active market has developed wherever improved varieties have appeared. Instead of using the loquat root, quince seedlings or rooted quince cuttings may be used. The culture of the loquat is limited to the more frostless belts and localities, where winter rains are not too continuous to prevent pollination and setting of fruit.

Before you rid the dairy herd of the "robber cow" make sure that she is having a fair show by being supplied with the proper rations, care and shelter.

Cut green and fed to the hogs in inclosures, alfalfa makes one of the best feeds in the world.



"Bull" Durham
An International Favorite

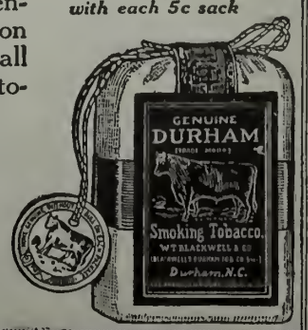
Smokers of experience and discrimination the world over obtain year-'round, daily enjoyment from "Bull" Durham tobacco. Men prominent in the social, business and public life of many nations find supreme tobacco satisfaction in the deliciously fresh, mild cigarettes of unique flavor they roll for themselves, to their individual liking, from this wonderfully pure, mellow tobacco. Their distinguished example has made it correct, smart, fashionable to "Roll Your Own" upon every occasion.

GENUINE
"BULL" DURHAM
SMOKING TOBACCO

There is no purer, milder tobacco in the world than "Bull" Durham—none other with such a sweet, mellow, irresistible fragrance. This rare, balmy aroma is as delicate and elusive as it is distinctive and pleasing, and can only be retained and enjoyed in the *fresh-rolled* cigarette.

"Bull" Durham hand-made cigarettes afford wholesome enjoyment and lasting satisfaction to more millions of men than all other high-grade smoking tobaccos combined.

Ask for FREE book of "papers" with each 5c sack



FREE An illustrated booklet, showing how to "Roll Your Own," and a Book of cigarette papers, will both be mailed, *free*, to any address in U. S. on postal request. Address "Bull" Durham, Durham, N. C., Room 1100

THE AMERICAN TOBACCO COMPANY

The Cow's Udder and Its Care

By Hugh G. Asselstine

[The following was a first prize essay of the class of 1914 of the University Farm School at Davis this spring. The writer comes from Humboldt county, for many years the banner dairy county of California.—Editor.]

The cow's udder is a delicate piece of machinery, as sensitive to abuse, ill treatment and improper care as a watch.

Few dairymen, however, realize this fact, or if they do no one could ever detect it by the care they give their cows.

To avoid the losses so common in the big dairies it is essential that the dairyman know something of the structure of the udder and the many factors which unite in causing udder troubles, together with some idea of how to combat them.

The udder of the cow is composed of two separate halves, the right and left halves, which are separated by fibrous tissues. There is no connection between the two halves, so milk cannot be drawn from one to the other. The milk glands proper are located near the abdomen, and extend downward into the udder, the remainder of which is occupied by blood vessels, nerves, muscles, ducts and tissues, making it rather open and spongelike.

At the lower end of the teat is the sphincter muscle, which keeps the milk from escaping. Over this the cow has no control whatever. The upper end of the canal in the teat is connected with the milk reservoir, the size of which varies in different cows, the capacity averaging about one pint. The opening from this reservoir into the teat is also guarded by a muscle over which the cow has little control.

Extending from the sides and top of this reservoir are a large number of ducts or tubes called milk ducts. They divide and subdivide to form a chainwork of a very large number of small tubes and are surrounded by blood vessels, nerves and muscular tissue. There is a still more complicated network of division and subdivision, but let this suffice to illustrate the point that in dealing with the cow's udder we are working with a very complex mechanism.

With heavy milkers as a rule the udder is enlarged and more or less hot and tender just before and after calving. This swelling may extend forward to some extent on the abdomen. This condition is to be expected and need not cause any anxiety. It is more pronounced when the animal has been well fed and is in good flesh.

When this exists the animal should not receive much grain until the udder softens. The ration should be laxative in nature and of a light character. Bran is especially adapted for feeding at this time. The milk should be drawn several times during the day after calving, followed by active rubbing or kneading of the udder. Milking before calving is advisable only with the heaviest milkers, when they are suffering greatly from the distention of the udder.

Congestion of the udder may merge into active inflammation or gargat, as it is often called. This usually results from exposure to cold, moisture, drafts, from blows or injury to udder, or from over-feeding of rich protein feeds. The cow should be kept from exposure to cold weather and to cold drafts and off cold, wet floors until congestion leaves the udder.

Many times there will be only a slight swelling in the udder, which will not interfere with the milk secretion beyond a tenderness. Or the milk may be lumpy and full of threads with no noticeable hardness in the udder. In severe cases the milk is usually suppressed and replaced by a yellowish watery fluid, containing clots of casein. The first symptom in these severe cases is a shivering of the animal, with cold ears and horns, followed in a short time by a fever. One of the best methods of treatment in mild cases is to thoroughly massage the udder and work in an ointment of one tablespoonful of gum camphor and six tablespoonfuls of lard. A physic should be given at once and care taken not to expose the cow to cold weather or drafts. Another treatment for the more severe cases is made by mixing two ounces of fluid extract of belladonna leaves with four ounces of poke root and eight ounces of lard.

There is nothing so good, however, as "elbow grease" in curing mild cases of caked udder. It is always advisable to give the cow a good physic in severe cases of Epsom salts, one to one and one-half pounds in a drench; follow this for several days by giving one ounce of saltpeter in the drinking water daily.

Milk fever is a peculiar affection of the cow occurring as a form of paralysis and associated with young cows, but usually after the growth of the cow has ceased and all her energy is devoted to milk production, or usually when she is from five to nine years old. The disease is so typical that it is easily recognized. It occurs in nearly every case within forty-eight hours after calving and usually only after a normal parturition.

The first indications are restlessness and excitement on the part of the cow. Her gait becomes unsteady and she gradually loses control of her hind parts, finally falling to the ground. She is usually unable to rise; the cow now assumes a characteristic position which is a great help in diagnosing the case. She lies with her head turned to one side with her muzzle pointing toward the flank. The entire body is paralyzed and she expresses all evidence of being in great pain.

While it is possible to stop milk fever by any means that will fill the udder with air, yet there is danger of introducing infection unless extreme care is taken. But for this fact an improvised outfit could be used. It is well, however, to use a standard milk fever apparatus which can be secured from any drug store for a nominal price. Before using this apparatus the operator should thoroughly cleanse his own hands and wash the udder and teats of the cow with an antiseptic solution, then having the apparatus free from infection, the milk tube may be inserted into the teat without drawing what milk it contains and the quarter of the udder filled and well distended with air. The tube may then be carefully withdrawn and a tape tied around the teat tightly enough to prevent the air escaping. The same treatment is applied to each quarter. The udder should remain full of air for at least twenty-four hours; longer if there still is sign of trouble. The tape may be removed and another treatment given in case the air has escaped. Of course, the calf has had to get his meals elsewhere during this treatment.

Chapped teats may be caused by anything that irritates them, as for example, the sudden chilling of the teat in winter after the calf has just let go; milking with wet hands, or contact with cold, dirty water. The trouble may be slight or it may develop into deep, gaping sores. The use of vaseline at the first sign of the trouble will usually check and cure it. If the teats are badly chapped, thorough washing in warm water followed by application of gly-

Copro

Look for this name on every sack

If Your Dealer Can't Quote Prices Write Us Direct

A Natural Food For Hogs, Dairy Cows and Poultry

Pure Cocoanut Oil Cake Meal

Made From Selected Cocoanuts By OUR IMPROVED PROCESS

Contains 16.4% Protein
All Digestible

Free Sample and a copy of our booklet containing valuable information on the subject of "Successful Feeding" sent gladly on request. Write today.

Address Department C

PACIFIC OIL & LEAD WORKS

Manufacturers

155 Townsend Street San Francisco, Cal.

FOR SALE

HOLSTEIN-FRIESIAN BULLS

Five registered bulls and 4 registered bull calves.

These calves are from Eastern A. R. O. grand dams and have for sire King Seges, 2d, one of the best young bulls in the State of New York. —AND—

1,000 Unrecorded Pure Bred Shropshire Ewes and Rams.

These sheep are large and in fine condition. Can be seen near Firebough. Prices on application.

MILLER & LUX, INC. Merchants Exchange Bldg. San Francisco

For Sale

Shropshire, Rambouillet and Cotswold-Rambouillet Rams.

1,200 Head

These rams are splendid types of their respective breeds. Their sires are imported rams from the best flocks in England, Canada and United States. They are priced right in any quantity to suit purchasers.

For particulars address

D. C. Wheeler, Inc., Reno, Nevada

HOWARD CATTLE COMPANY

Breeders and Importers of

SHORT-HORN CATTLE

55 New Montgomery Street San Francisco

GEORGE D. HARRAH
NEWTON, IOWA
BREEDER OF
HEREFORD AND SHORTHORN CATTLE

HALLWOOD FARMS

Breeder and Importer of

SHORTHORN CATTLE

Address E. M. HALL, Carthage, Missouri.

cerite of tannin or equal parts of spermaceti and oil of sweet almonds is to be recommended.

Warts on the teats are often troublesome in milking, besides adding to the danger of increasing the possibility of contaminating the milk through infectious material which may be found upon them. They may be greatly benefited or entirely removed by smearing them thickly with pure olive oil. If they are large and still persist despite this treatment, they may be cut off with a sharp pair of scissors and the spot touched with a stick of caustic potash. They may be oiled now and the caustic potash treatment repeated as often as necessary to prevent their renewed growth.

Some cows lose a portion of their milk by its leaking from the udder. This may occur when a cow is milking heavily and the periods between milking are not evenly divided, or it may be because the sphincter muscle is not performing its duties properly. As there is no remedy for this trouble, about the only thing that can be done, in case conditions warrant, is to place a rubber band around the lower part of the teat.

Too small an opening in the teats is the most common cause of hard milking. The size of the opening is controlled largely by a strong sphincter which closes the teat opening more than it should normally. Anything that will cause this muscle to contract slightly and the opening to remain larger will as a rule make hard milkers easier to handle. Often lead or rubber teat plugs are placed in the teat duct and fastened there so the cow wears them from one milking to another, this treatment in time curing most hard milkers.

In some cases this treatment is not sufficient and the only cure is to cut the teat on the inside with a teat bistcury. This instrument is passed into the teat canal and by means of a turn of the handle a small knife is projected. As the instrument is removed, it cuts the side of the teat duct and the surrounding muscles. An ordinary teat plug is then kept in the teat except at milking, until the cut heals. This is a rather dangerous operation and because of the likelihood of infection it is best to call a veterinarian. Of course, it is understood that anything which is to be inserted into the cow's teat should first be thoroughly disinfected.

VETCH FOR HAY

One of the greatest needs on farms is a variety of crops that can be profitably grown. One of these almost entirely overlooked is vetch as a hay crop. In certain parts of the State, notably in the citrus districts, vetch is very frequently grown as a green manuring crop, to be plowed under in the spring to provide humus for the soil, but even in those districts its merits as a hay crop are overlooked.

Vetch has the merit of being a winter grower like bur clover and Canada field peas. It also is a legume, or a member of the pea family, and so gathers up nitrogen from the air to store it in its own tissues, where it is of special value as feed or for adding fertility to the soil. Vetch hay as a feed is thus in about the same class as alfalfa hay.

The best way to plant vetch is with oats or wheat. The grain raises the vetch off the ground and makes it easier to cut. It also makes a mixed grain and vetch hay, which is better than vetch hay alone. About 40 to 60 pounds of vetch is sown to the acre by this method. The yield is ordinarily heavy, as three tons of hay is often secured on good land.

One trouble with hay farming is that nothing is ever restored to the soil. Vetch adds nitrogen from the air, some of which is left in the soil by the roots. Then it gives the soil a change, if not a rest, and if the manure is applied to the land it certainly leaves it more fertile than at the start. Altogether the greater yield and the high food value makes vetch a hay crop worthy of far more attention than it gets. It seems particularly suitable for foothills farming, or diversified farming where stock takes an important position. One El Dorado farmer tried vetch and grain one year and thought it was fine, but never thought about sending off for seed again for following years.

The best time to plant vetch for hay is as early as possible in the fall so that it will get a good start and have full use of winter rains in the growing season.

Buy a boar of some reliable breeder who has been working for years to get the correct shape of a pig and who is prepared to furnish the shape you desire.

ORCHARD and FARM'S NEWEST GIFT TO ITS LITTLE BOYS AND GIRLS

FREE TAMBO The Clown Doll

Made Especially for Boys and Girls of Orchard and Farm's Family

The laugh of a child! What happiness there is in the lifting tone! What cheer it brings to the household! The laugh of a happy child—it turns the gray days to one of sunshine and gladness and the joy of living. And what will make a child happier, what will bring the dear little crinkles to the corners of the cherry lips more quickly than the funny face of a clown doll! Don't you remember when you sat with the little one on the seats of the great circus tent and watched the funny, rollicking clowns as they jumped here and there about the ring? Don't you remember, too, how that little one who accompanied you, laughed and crooned and clapped the tiny hands in the wonderful enjoyment of it all? There is nothing funnier, nothing more enjoyable to a child than the sight of a funny, painted clown, with his queer dress and his big, droll eyes. And so knowing this, ORCHARD AND FARM gave forth orders to its expert designers that they must produce the funniest clown in the world. The designers have done it. One look at TAMBO—that is his name, you know—and the children cannot help laughing. There are no tears when TAMBO is around—unless he should happen to be lost, for Tambo is funny. There is an air of happiness about him, a supreme manner which tells you that he knows he can bring the laughter—and he is perfectly satisfied with life. And Tambo has his own mission in life. The days may be stormy and dark, they may be cold and dreary, but where Tambo is, there is happiness. Should the months be those of winter, they will turn to summer again, for Tambo will bring back the days of the great spreading canvas tents, and the sideshows with their banners flapping in the summer wind, the great platform, where the man with the red vest taps loudly with his cane and shouts: "Step closer! Step closer—everybody—and see the snake with the gold tooth!" There is no need for the tents and the platform and the great lot with its lemonade stands, when your child possesses a TAMBO CLOWN DOLL. He is a circus all in himself. He never loses his temper. He never loses his smile. He never loses his funny outlook on life. He is Tambo the merry, day in and day out. Day after day the designers for ORCHARD AND FARM worked and studied that they might produce the funniest, the happiest little doll in the world—and they have succeeded. Queer, indeed, is the child who will not laugh at "Tambo."

TAMBO, the Clown Doll

is about 17 inches high and is the best playmate any child could desire. You can't help but laugh when you see its cute, funny face. Tambo is beautifully lithographed in many colors on good quality cloth, all ready for cutting out and stuffing. When stuffed, the limbs are movable, permitting the doll to be placed in any kind of position. It is much preferable to a china or wax doll, being practically indestructible. They can't be broken, no matter how thrown about. Tambo is dressed in fancy costume and you are not put to the trouble of making clothes.

GIRLS AND BOYS:

Children—ask your father or mother help you get Tambo, the clown doll. They can simply renew or extend the family subscription for one year at 50c, and Tambo, the clown doll will be sent as your premium. Later, when you see how cute Tambo is, you may want to get some more for a birthday present to give some of your friends. This you can do by getting some subscriptions. The work is not hard.

MOTHERS:

There isn't anything you could possibly give your children that would give them so much pleasure, or do them and you the same amount of good as Tambo, the clown doll. If your own child is now too old to care for a doll, make happy some other girl or boy by a present of Tambo. If your child wants the doll and is old enough to do the small amount of work necessary, please encourage and help it. This doll alone retails for 35 cents, and is well worth the money. Order now while you have the matter before you.

How to Get Tambo, the Clown Doll

Send us a new subscription for ORCHARD & FARM, which is only 50c per year, and Tambo will be sent free of all cost to you by return parcel post. If you cannot get a new subscriber for ORCHARD & FARM, just get your papa or mamma to extend your own family subscription for another year at 50c. Send us this subscription, and by return mail we will send you Tambo.

(Coupon)

ORCHARD & FARM,
Hearst Building,
San Francisco, Cal.

Enclosed please find 50c. Please mail to address below ORCHARD & FARM for one year and Tambo, the clown doll, as per your offer above.

Name_____

Town_____State_____

_____
(Name of party to whom Tambo should be sent.)
Return this coupon with order.

Hints for the Christmas Season

"Christmas Gifts" was the subject announced for the Household Exchange this month and so many good suggestions came in that it has been extremely difficult to decide between them. As it is a number of the suggestions have been crowded out.

For each of the first two suggestions given we are sending a coffee percolator; for each of the next three a set of six kitchen knives and for the others a hair brush and comb.

For the December issue the topic, as announced in our last issue, will be "My Favorite Christmas Dish." A number of apparently excellent receipts have already been received and we believe it would be well, in order to keep from getting swamped with thoughts for the Christmas dinner, for no one to send any more suggestions unless they are known to be especially attractive. Still, it would be too bad to miss anything real good and it would be better to send in a suggestion regarding some good dish, even if it is crowded out, than not to send it in, for it will likely be used at some later date.

When sending in suggestions the following rules should be observed:

Suggestions must not contain more than 150 words.

Competitors must write on one side of the paper only, and sign name and address after each suggestion.

Not more than two suggestions a month may be sent by one person, and only one award will be given to one individual in a single month. Do not send a letter with your suggestion. The suggestion itself is enough.

Address all your suggestions to Household Editor, "Orchard and Farm," Hearst building, San Francisco.

We wish to particularly emphasize the importance of keeping the suggestions within the limit named for length.

The suggestions for this month follow:

Hemstitched Handkerchiefs.

A yard of linen will make nine or more, according to size. To make them pull a thread both crosswise and lengthwise of the yard of goods, the size square you want handkerchiefs, allowing half inch for hems. Now cut where threads are pulled. You prepare to hemstitch now. Pull four threads on each side of handkerchief, one inch from edge. Turn, hem, baste and hemstitch. A narrow lace edging makes a nice finish. To gather lace take hold of the coarse thread at back edge of lace, and by pushing the lace back gradually you can gather any amount you want. Gather lace full at corners so they won't pucker. In sewing lace on whip over and over by hand. Material will cost about one dollar, while to buy they would cost fifty cents each. These make an inexpensive and welcome gift, as one can't have too many handkerchiefs.—MRS. J. N. HALL, Tolo, Oregon.

Children's Gifts.

Put rockers on a box of right size and you have a nice cradle for dolly. The bedding and cover can be made of a few scraps. A sleigh is easily made. A hobby horse can be made from a big stick of wood with small sticks for legs, a wooden head and a bunch of horsehair for mane and tail. A little paint adds to the looks of home made articles. To make a serviceable dolly take strong cotton goods, make body, arms and legs, buy an unbreakable head, dress neatly and baby has a doll not easily destroyed.—MRS. EMMA E. SMITH, Millville, Cal.

Roll of Center Piece.

A most acceptable Christmas gift is a roll to place center pieces in. It can be made of a pretty crepe from fifteen to twenty-five cents a yard and lined with sateen at twenty cents a yard. One and one-third yards of each is required. Take a cardboard mailing roll twenty inches long and cover with the material and seal the ends with fitted cardboard, also covered. Then line the material with the sateen back to back, and slip stitch all around. Fasten one end the entire length of the roll. The doilies are laid flat on the sateen side and rolled up and held in place with silk elastic one-half inch wide to match, or cotton elastic covered with shined ribbon. The elastic will allow the roll to hold one or a dozen center piece.—MRS. R. J. R., Nevada City, Cal.

Hot Dish Mats.

Cut two oblong pieces of linen for each mat to be made, then round the corners a little, cut in scallops and work in buttonhole stitch. Work one piece of each mat with some simple embroidery design and fasten the other piece to it on three sides. Insert a sheet of asbestos just a little smaller than the mat and take a few stitches to hold the sides together when used, but making it easy to remove asbestos when laundered.—MRS. C. R. FIELD, San Jose, Cal.

A Fir Pillow.

Instinctively we crave the sights and sounds and odors of the place where we were born. If you are a country girl, and have a friend in the city who was born among the firs, send her a fir pillow this Christmas. Perhaps when she comes home, nerve strained from the wrangle of a city day, and lies down for a moment's rest that soul remembered fragrance will slip the weight of all the years from her tired heart; strip from her memory all the little frets and pricking memoirs which gather as they age and leave her for a moment with the childhood sense of all is wellness holding mother's hand. Make the cover of any good firm cloth, fill with fir tips and sew a card around the edge. If you are clever with brush or needle you may decorate the cover with a bit of fir bough. —MRS. CLARA M. BRENNIR, Maxwell, Cal.

Dainty Handkerchief Box.

Cover a pasteboard box outside, including top of cover, which has no turndown edges, with cream colored watered silk. On cover paste a pretty pictured face, with cotton underneath to raise it a little. Over picture put a piece of cream chiffon; around edges stick very narrow silver braid with liquid glue or library paste to serve as a frame for the picture, which will look like a hand painting. Line box with plain cream silk.—MRS. H. L. SHIDELER, Watsonville, Cal.

Handkerchief and Cuff Cases.

Get two parts fancy Chinese boxes, just to come together instead of fitting into one another. Line with Chinese silk, making ribbon bows for hinges and fastener, and place a large flat bow of wide ribbon to match the other diagonally on top. The boxes are made in checker style, usually of two colors. A square one thus fixed makes a pretty receptable for handkerchiefs and an oblong one for cuffs, the latter can then be laid perfectly straight. For a hair receiver take a small sized Chinese cuff, line with China silk and finish the bottom with same in bag form. Use ribbon to match silk to hang up by.—MRS. W. A. ADAMS, Clio, Cal.

Baby Carriage Cover.

Take a square of fine white net (about a yard and a half), bind with pale pink or blue ribbon, then cover four coat weights with the ribbon and tack to each a ribbon rosette. Fasten a rosette to each corner of the net and you have a dainty covering for carriage or crib and one that will not blow off.—MRS. C. R. FIELD, San Jose, Cal.

Handy Hangers.

Take a piece of pretty ribbon one inch wide and four inches long. Sew one end neatly over the bar of a safety-pin and fasten the other to a garter hook and your hanger is completed. Fold your skirt and pin one at each side in the band and hang up on two hooks or nails. These were greatly appreciated by many of my friends last year and are very inexpensive. I make either six or twelve for each person.—MRS. F. M. BRAMWELL, Pleyto, Cal.

Patterns for the Christmas Season

NOTE.—In our pattern department this month we are using a greater number of embroidery patterns than usual and patterns which will probably prove valuable for the Christmas season.—Editor Household Department.

No. 5917—Misses' Waist. With lining; Directoire collar; high, round or square neck; long one-piece sleeves perforated for short sleeves. May be made with or without cape. Sizes 14, 16, 18 and 20 years. Size 16 requires 3 yards 36-inch material for waist with cape. Price, 15 cents.

No. 5785—Misses' Skirt. Having a three-piece foundation lengthened by a straight one-piece section. High waistline. One-piece tunic (with straight lower edge) plaited or gathered in front and back. Width around lower edge of skirt about 1¼ yards. Sizes 14, 16, 18 and 20 years. Size 16 requires 3½ yards 36-inch material, with 1⅝yards 27-inch lining for foundation gores. Price, 15 cents.

No. 5787—Ladies' Night Gown. Having body and sleeves in one... To be slipped on over the head. Sizes 32, 34, 36, 38, 40, 42, 44, 46 and 48 bust. Size 36 requires 3½ yards 40-inch or 45-inch material. Price, 15 cents.

Embroidery design No. 11963; transfer pattern, 10 cents. Scallop No. 11661—¾-inch wide; transfer pattern, 15 cents.

No. 5902—Ladies' Costume. Without lining. Having long one-piece sleeves perforated for short sleeves, adjustable shield with high or round neck, high waist line, attached four-piece skirt with plaited section inserted between front gores and in regulation or shorter length. Length of skirt in front from natural waistline 42, back 44 inches; perforated for 40 inches front, 42 inches back. Width around lower edge about 2½ yards. Sizes 32, 34, 36, 38, 40, 42, 44 and 46 bust. Size 36 requires 4¾ yards 44-inch material, with ⅝ yard 18-inch lace for shield and standing collar. Price 15 cents.

Braiding design No. 11506; transfer pattern, 10 cents.

No. 5021—Infants' Set. Consisting of a sacque, cap and bootees. One size. The set requires 1⅛ yards 27-inch material. Price, 15 cents.

Embroidery design on sacque No. 11881; transfer pattern, 15 cents.

No. 4889—Girls' Dress. Without lining. Having sleeves combined with body and attached five-gored skirt with a plait at each seam. Closing to the left of center-front. Sizes 4, 6, 8, 10, and 12 years. Size 8 requires 2⅝ yards 44-inch material. Price, 15 cents.

Embroidery scallop No. 11693; transfer pattern, 15 cents.

No. 5018—Dainty and enviably attractive are the boudoir provisions, these little caps being among the most favored. Designed for both ladies and misses, they are cut in three sizes: small, medium and large. Medium size requires ⅝ yard 27-inch material for Cap A; ½ yard 36-inch for B, and ⅝ yard 27-inch for C. Price, 15 cents.

No. 5904—Ladies' Waist. Without lining. Having vest, revers and flare collar in one; adjustable shield, with high or round neck; long one-piece sleeves perforated for short sleeves. Sizes 32, 34, 36, 38, 40, 42 and 44 bust. Size 36 requires 2¼ yards 36-inch material. Price, 15 cents.

California Aspects of the Breeds

—The Holstein-Friesian Cow. By W. M. Carruthers—

This article is written for the Holstein cow and it is to be hoped that no other dairy breed will take exception. The battle of the breeds has been decided long ago. They all have their fanciers and good qualities.

Holstein cattle are rapidly occupying the richer and more important dairy sections of the country; hence there is a great demand for information in regard to them.

Utility Holstein Herd of J. W. Benoit at Dairy Show.

They were introduced from the province of North Holland and Friesland, a section of the Kingdom of Netherlands bordering on the North Sea, commonly called Holland. The dairymen of these provinces are descendants of the ancient Friesians, and their cattle are lineal descendants of the cattle bred by them two thousand years ago. From the earliest account of dairy husbandry these cattle have been used and developed for dairy purposes.

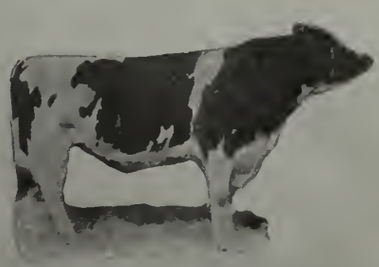
North Holland has been mainly devoted to cheese productions, and Friesland to butter productions. Chambers' Encyclopedia states that the area of Friesland is 1,253 square miles (53 less than the State of Rhode Island). In 1874 England imported from Friesland 4,565,456 pounds of cheese and 29,796,592 pounds of butter. In 1879 the number of cows in Friesland was 144,802. Assuming an equal number on 1874, this importation of butter from Friesland was an average of 205¾ pounds from all cows, old and young, owned in that province. Even if there were no home consumption and no sales to other countries, these exports alone sufficiently demonstrate the great capacity of this breed, which is found in more countries, occupies more territory and probably produces more milk, cheese and butter than all other dairy breeds combined.

Eastward from its place of origin this breed has spread even more extensively than southward. It has extended even to Russia, where at the mouth of the river Dwina, nearly under the Arctic circle, it has produced the Kolmorgorian breed, the most highly valued cattle of that country. Whether it might have spread westward into England and the Channel islands, but for the laws restricting importations from the continent, cannot be said. It is, however, asserted by Professor Low, an eminent English author on breeds of cattle, writing in 1840, that early importations of Dutch cattle exercised great influence on the formation of the Teeswater, afterwards known as the Shorthorn breed.

A notable characteristic of the Holstein is their adaptability to varying climatic conditions. They were brought to their present high standard on the rich meadows of Holland, but they lose nothing by removal to the Western hemisphere. On the green hillsides of New England, New York and Ohio, the prairies of the Mississippi valley, the level valleys of Minnesota and North Dakota, and the high bench lands of Montana, as well as in California and Texas, they are dominant. The Holstein blood is strong and not only remains unimpaired in all sections of the world, but improves all others with which it is mingled.

In proof that this breed has maintained a high standard of vital force, we point to its use in almost every climate, including that of Northern Russia, nearly up to the Arctic Circle. Here in America it is as hardy as our native cattle. Its calves are raised without difficulty. Taken from their dams at three days old and reasonably fed on skim-milk and a little oil meal they grow like weeds. Given plenty of food, no matter if much of it is roughage, they develop rapidly. The heifers usually drop their calves at about two years old and henceforward are profitable to their owners.

The type of the breed is technically called the milk and beef form. It is especially strong in all vital particulars. The bones are fine, compared with the size, and chine broad and strong, compared with the high and sharp chine of the extreme milk form. The loin and hips are broad and smooth, and the rump high and level, compared with the angularity usually shown in the milk form. The twist is roomy and the thighs and hocks well apart. Passing forward, the shoulders are smoother and more compact than in the milk form, but of lighter weight than in the beef form. The brisket is not so wide and low as in the beef form, and the chest is not so deep, but the width of the beef form through at the heart is closely retained. In the milk form the abdomen is usually swung low, and the ribs are steep; but in the milk and beef form the ribs are wider sprung and the abdomen more trimly held up, though no less capacious. The general appearance of the bull is strongly masculine, but that of the cow is no less feminine than in the milk form.



Grand Champion Holstein Bull, Sir Jessie Fobes Plebe Burke.

The true type of the breed is very accurately delineated in the scale of points. The Holland type, which is that outlined in the scale of points, is the result of centuries of selection and environment, and it has distinguished these cattle in all parts of the world. With it has come the marvelous and profitable production or yield, and the characteristic tendencies of powerful digestion and perfect assimilation of food. Large size in the Holstein is the first thing to impress the casual observer, and its importance should never be disregarded. To this form of these cattle is due their extraordinary constitutional vigor or vital force, and it affects all their relatins to their food, care and productions.

This breed excels in milk production, it is superior for veal production, and valuable for beef production. For generations the natural conditions under which these cattle have been developed have been most favorable for this combination of qualities. Looking upon one of its model cows, the broad loin and rump seem just the place for the growth of the finest quality of beef and the fit support of the capacious udder. The straight quarters and well rounded body cannot detract from milk production. The calves are large at birth and they grow and fatten with great rapidity. The breeders in Holland and Friesland have always avoided in-and-in breeding.

There can be no profit in animals that consume only the food necessary for support. The more they can consume, digest and assimilate above this the more profitable. Another essential feature is that dairy animals should by no means be choice in the quality of their food. Cows that will freely consume the roughage of our farms and transmute it into valuable products—milk, butter, veal, beef—are more valuable than those that require the costlier commercial feeds. These cattle, from calfhood upward "are by no means choice in the quality of their food." In their native country they generally begin taking skim-milk, usually more or less sour, at the age of from three to six days. Many of the breeders in America begin this early to give them the same kind of food.

When the milk producers of a community start in to put their business on a paying basis their first question is "what breed of cows will best serve the purpose?" This question has been asked in Maine, New York, Wisconsni and now the same question is being asked every day in the State of California. In order to answer this question, it is necessary to decide first what any breed of cows must do to make profit for the dairymen. The cows must yield milk enough to pay for themselves and their keep and to net their owners a profit. One should get cows that will average 7,000 pounds per head and upwards a year, in order to lower the production cost so that the milk may sell at a profit at the price you get for it. The 7,000-pound cow will make her milk at a cost below 2.4 cents a quart and the 8,000-pound cow and larger yielders will bring the production cost below 2 cents a quart, thereby enabling one to sell at a profit in nearly every circumstance.

The Holstein breeders claim that there is no other breed available that will enable farmers to make milk as cheaply as they can make it with a Holstein cow. If this statement is correct, dairymen who secure these cows, taking pains to secure well known strains and good individuals, start with every prospect of success.

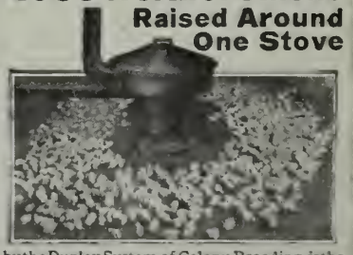
Cows of this breed offer the dairymen of this State great inducements.

The 9,000 pound yielder of 3.5 per cent fat milk is a money-maker. In a year she produces 315 pounds of butter fat, equal to 85.7 per cent to 367 pounds of butter, and 8,633 pounds of skim milk. Her keep will cost you $48 to $50 a year and her 4,500 quarts of milk at 3 cents a quart will bring you $135, or her 367 pounds of butter at 25 cents a pound will bring $91 a year, while her 8,633 pounds of skim milk fed back on your farm will be worth about $18, making you a total return of $109 a year. Deducting her yearly cost of $50 you will in either case net a good profit on her work.

When the dairyman has decided the breed he wants and taking the Holstein on account of its large quantity of milk, he then asks himself the question which breed is the most vigorous, the most prolific, the longest-lived, the best able to keep up immense production through a long career, the most resistant to disease, the least liable to abort, the surest to breed and to rear calves, the ablest to convert the roughage of the farm into milk, the most abundant producer of fertilizer, the quickest to respond to good treatment and rations, the slowest to fall off when the treatment in rations are not of the best and the most certain to command the highest price when beefed. The instantly suggested answer is usually the Holstein-Friesian cow. No well informed student of dairying will dispute the point, Holland has the most prosperous dairying interest in the world (this little country could be dropped in San Joaquin Valley of California). Her lands range in value from $500 to $1,200 per acre. Her so-called farms range in size from five to twenty acres. Her tenant farmers pay from $30 to $60 per acre per year for rental. Cost of feeds are high. Even the lush pasturage is expensive. Notwithstanding all these drawbacks Holland makes her dairy interests immensely profitable and she does it by means of her giant Holstein cows, giant in frame, giant in flesh, giant in milk yield and giant in beef when their milking days are ended. What these great cows are doing for Holland they will do for the California dairymen who wish to earn profits. Dairymen in other sections of the United States, laboring under less favorable conditions than we have in

(Continued on Page 35.)

$1500 Worth of Chicks Raised Around One Stove



by the Duplex System of Colony Brooding, is the report of one of the country's big poultrymen.

This wonderful method of brooding is the only logical and practical way to Save Every Healthy Chick Hatched; if free from organic disease; Bring Them All to Maturity, Positively Eliminate White Diarrhoea and Cut Out All Drudgery Connected With Brooding.

Kinnear Poultry Co., Sussex, N.B., says "The Duplex Combined Brooder Stove and Ventilator is easy to operate and perfectly satisfactory with results."

This is the stove that will not smoke or throw off fumes—has regulator that controls flow of oil—keeps temperature at correct point—heats and ventilates perfectly at all times.

Made in 3 sizes to meet all requirements. To get further information about the Duplex System

Send for Free Book on Brooding

and learn how to Cut Labor and Expense of Poultry Raising in Half, as well as to Keep Chicks Healthy and Alive, Until Maturity. Other interesting literature free.

Special Freight Prepaid Proposition for those living West of the Rocky Mountains.

DUPLEX COLONY BROODER CO.
Box 613 ROCKFORD, ILLS.

WEALTH IN INVENTIONS. Patent your ideas. Send for our Free book, and advice How To Succeed. SUES & CO., Attys., 563 Seventh St., Washington, D. C.

Good Prices Change Poultry Methods

By the Editor

In the September issue of Orchard and Farm there was emphasized the great advantages that the farmer with lots of green alfalfa and skim milk has in egg production. It is in Tulare county that this fact has been best recognized and that has been directly due to the obtaining of good egg prices by the Tulare Co-operative Poultry Association.

When one comes down to brass tacks, the most important factor in getting good returns from fowls is the proper care and feeding of those fowls. They must be of good laying stock, have all they need of the right kind of food, be kept clean and healthy, the eggs must be gathered frequently, be kept in a cool place, and the many other necessary details must be attended to. Without this care all the natural advantages of climate, range and feed and the highest egg prices ruling will not bring success. In the following a short sketch of the methods by which good prices secured by the Tulare Co-operative Poultry Association encouraged farmer members to radically change the care formerly given eggs and poultry.

The low standing of poultry methods on the ordinary farm only need to be spoken of to be realized. If good results are to be secured good laying stock has to be kept. On the ordinary farm as a rule the fowls are mongrels of several generations and the breeding has looked after itself, save where a setting or so of eggs was secured now and again from a neighbor accustomed to keeping better stock than others.

To get plenty eggs hearty feeding of the right kind is an absolute essential. Fowls must have enough for themselves and a handsome surplus of good food for the eggs. They usually are permitted to pick up whatever food is available, enough to live on or they would not live, and are often given a little more for conscience sake, but not enough of a surplus to produce up to the best.

To have high quality eggs roosters in hot weather must normally be kept separate from the hens, or blood rings will develop. Almost invariably when eggs are merely an incident the roosters run continually with the flock, and most of the time they are of the same breeding as the rest. The latter feature, however, relates to strength of stock rather than to keeping quality of eggs.

It is necessary to gather eggs frequently, but on most farms there are so many nests stolen away and so little attention is given to time of gathering eggs that they are often stale flavored or even worse.

The old hens need to be removed, the fowls need charcoal, lime and special food for the best of health and for strong laying. Nests need to be kept clean to have clean eggs. Attention to details, to shorten the summary, has to be given to get a good supply of eggs and eggs of good quality. It is commonly known that as a rule few of these points are well attended to on the average farm where hens are merely an incident.

For years the United States Department of Agriculture has been advising regarding all these details, as has the State Agricultural Colleges and the agricultural press, all without a great deal of effect. They have gone at it from the wrong angle. They have said, "Attend to business and you will get good prices." It may be true, but still truer would be the statement, "Get good prices and then you will attend to business."

That is what happened around Tulare with the members of the Tulare Co-operative Poultry Association to a greater or less extent, some to an excellent degree, others in very small amount. When the prices became good the poultry methods improved with them. It is what occurs with almost any agricultural product. It does little good to tell a person to attend to business in order to make business worth attending to, but when business gets worth attending to they will look after it without further encouragement. Moral: To improve farm methods, get money for farm products.

Something about the workings of the Tulare Co-operative Poultry Association was told in the last issue. With a small amount of repetition it will be worth while to tell how its success changed poultry methods on the farm for the better.

This was organized in May, 1913, as a co-operative non-profit organization, with shares selling at $25, the membership growing from 40 to 110. The present manager, I. N. Foss, served previously as secretary. M. M. Bottreill was one of the leading organizers and until recently manager. A few months ago the farmers of Visalia wished to organize along the same lines as the Tulare association and get full value out of the poultry possibilities of their farms and induced Mr. Bottriell to come and manage that organization. The membership in this association costs $50, but the two organizations are to all intents and purposes operated along the same lines, buying grain and supplies for members at cost; and candling, grading and selling eggs, and some poultry, for members, also at cost. As the idea at present is the effect on farm methods of good prices, the Tulare organization, being the older concern, alone will be spoken of.

Before this association started eggs were bringing in Tulare stores six and ten cents less than Los Angeles quotation. A liberal quantity were over-aged, dirty, stale and not of even fair quality or worth more than was given, and naturally the fowls had to largely look after themselves and were given second place in feed and care. When payment was made by grade and price for quality jumped up to a cent below case count quotation for Los Angeles, there was an immediate improvement in egg methods and fowl methods. At the present time two-thirds of those delivered at the association headquarters are sold in Los Angeles as selects and firsts; that is, they are of standard size or larger, of standard commercial color, shape, size, age and quality. From a professional poultry ranch the proportion would be better than this, but it is a most excellent record for farm eggs, as with so many members some are sure to be a little slack at times, methods on a general farm could not be expected to be up to those on a specialized egg farm, and some eggs naturally would grade low through no fault of the producer.

The eggs are delivered by members twice a week. They are supposed to be, and generally are, gathered twice a day and kept in a cool place until hauled to town. This makes them as fresh as the market demands.

The eggs are candled in the basement of the building, entirely below ground level, where it is always fairly cool. They are mostly delivered from the farms in the morning before it gets very hot, graded and candled and shipped out by evening, arriving in Los Angeles early next morning, so nothing is lost in quality in shipment. A good egg in Tulare is just as good an egg in Los Angeles, unless it is just on the ragged edge. The eggs being graded and sold on quality, the members try to have their eggs grade as high as possible, which calls for egg care, and to get a lot of eggs they have to give good poultry care also.

The matter of removing roosters was totally neglected before the association started and all except a few scattering eggs contained the germ that means blood rings in hot weather. About one egg in five in the early history of the association had developed a blood ring or had started to go bad at time of delivery. At present the big majority of the members either have no roosters or pen them up when hot weather comes and very few let the cockerels run wild around the ranch. This and frequent gathering and keeping in a cool

The Modern Fireside

All you need to complete the family circle is a

PERFECTION OIL HEATER

There's cheer in its glowing warmth.

Dealers everywhere

Write for booklet, "Warmth in cold corners."

Standard Oil Company (CALIFORNIA)

San Francisco

12-16-20 Gauge Hammerless "Pump" Guns

Six Quick Shots!

The Marlin hammerless repeating shotgun is a fine-appearing, beautifully-balanced gun, without any objectionable humps or bumps; no holes on top for gas to blow out through or water to get in; can't freeze up with rain, snow or sleet; its solid steel breech (not a shell of wood) permits a thoroughly symmetrical gun without sacrificing strength or safety; **it is the safest breech-loading shotgun ever built.** Six shots in 12 and 16 gauges; five in 20 gauge.

It is **Hammerless** with **Solid Steel Breech** (inside as well as out)—**Solid Top—Side Ejection—Matted Barrel** (which costs $4.00 extra on other guns)—**Press Button Cartridge Release**—(to remove loaded cartridges quickly from magazine without working through action) **Double Extractors—Take-Down Feature—Trigger and Hammer Safety.** Handles rapidly; guaranteed in shooting ability: price standard **Grade "A" 12-gauge gun, $22.60; 16- or 20-gauge, $24.00.**

Send 3 stamps postage for big catalog describing all Marlin repeating shotguns (hammer and hammerless), all Marlin repeating rifles, etc. Do it now!

The Marlin Firearms Co., 116 Willow Street, New Haven, Conn.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of August 24, 1912, of

ORCHARD AND FARM,

published monthly at San Francisco, California, for October 1, 1914.

Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Managing Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Business Manager, D. W. Hill, 1233 Arguello Boulevard, San Francisco, Cal. Publisher, Country Life Publishing Company, San Francisco. Owner, Examiner Printing Company, Hearst Building, San Francisco, Cal. Hartley F. Peart, Attorney-Trustee, Humboldt Bank Building, San Francisco. Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities, NONE.

D. W. HILL.

Sworn and subscribed before me this 23d day of September, 1914.
[Seal] A. J. HENRY.
Notary Public in and for the City and County of San Francisco, State of California, 656 Market street.

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50

Discounts: 250 doses, 10 p. ct.; 500 doses, 20 p. ct. Use any injector, but Cutter's simplest and strongest. Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (ours or any other), as it affords less protection than fresh. **Insist on Cutter's.** If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly. **THE CUTTER LABORATORY, Berkeley, California.**

place makes loss from fertile eggs very small.

There has been a radical change in the quality of the fowls. Instead of being mongrels of various ages and neglected breeding, which naturally means stock of low vitality and small laying capacity, there has been a big demand for good stock. The demand for good stock has resulted also on account of white eggs bringing the highest prices. They had to get rid of mongrels to get eggs of one color and very naturally the White Leghorn is the standard breed, being the leading commercial egg fowl of California.

There was such a demand for good stock last winter that the association contracted for all of the day-old chicks of a large poultry plant and hatchery at Lodi. They were secured at ten cents apiece in large lots, with 5 per cent off for cash, making about two cents less per chick than the ruling price for the locality. A large number of chicks were also shipped in by individuals, as supplies from the hatchery were insufficient to meet the demand, indicating the improvement in poultry quality that occurred by putting a profit in the egg business.

On different ranches also care appears to be taken in keeping track of the fowls so that old hens can be removed. This provides more of a problem than on regular poultry ranches, where hens of one age can be kept in the same pen. On a number of Tulare ranches leg bands are put on pullets when they are secured and next year no leg bands are used. Then at the end of the season, by shipping off either all fowls with leg bands, or without, as the case may be, no hens over two years of age are kept, which is quite a change from ordinary farm methods, to say the least.

Another thing that has helped is the kind of feeding. There has been a well founded prejudice in city markets against valley eggs through the presence of "grass eggs," due to the fact that the hens have had too much alfalfa, or other soft green stuff, and too little grain. Under these conditions the eggs have a green yolk and, aside from age, are about as bad as rotten eggs for cooking. When the alfalfa is soft and green in spring it is almost impossible to keep the hens from eating so much that an egg or so of this nature will develop, but good grain feeding even when the alfalfa is at its worst in this respect will practically eliminate such eggs. Under normal conditions such eggs will not develop from hens with as much grain as their appetites demand. Lots of grain has to be fed to get lots of eggs, and the grass egg has been commercially eliminated and Tulare Co-operative eggs are sold to as fancy a trade as there is in Los Angeles.

For the rest of improvements in farm poultry methods, success and quality is simply the result of work and attention to details. When something pays, it is attended to; when it does not, it is neglected. There are less vermin now to injure the fowls and cut off egg production, the nests are kept cleaner, there is more shell, charcoal and other necessary fowl delicacies and luxuries provided by far than there was when it did not pay to work much with the chickens, as only by attention and care will fowls lay properly. In addition to this general care, there has developed, as pointed out, better stock, frequent egg gathering and taking to market, a partial elimination of the rooster and the fertile egg, the elimination of mixed stock and old hens, and a generous grain ration than makes for eggs of the best quality and flavor. All that is in addition to the skim milk and alfalfa pasture that provide the special advantages of egg production in California dairy districts.

And now for a few words as to association methods other than those spoken of. As with a creamery, members are credited with the number of eggs of various grades handed in and payments are made on the month or twice-a-month basis. Supplies of poultry food and other material are handled at wholesale price plus necessary margin for rent, labor and incidental expenses. All business is done on about a 7½ or 8 per cent margin, or less. Members may get 8 per cent interest per annum on membership fee, and any surplus is divided in proportion to business done, or kept in the treasury for working capital.

The eggs are largely shipped to Los Angeles. At first they were sold through the Challenge Cream and Butter Company, which is owned by the Dairymen's Co-operative Creamery of Tulare and the Riverdale Co-operative Creamery, but recently the eggs have been going to one of the leading wholesale houses of the city.

There is also a big trade to retailers and private customers, especially in Coalinga and other oil districts, as well as elsewhere, which eliminates middlemen's expense in part and helps profits.

The biggest problem is selling the poultry. Some method of getting good prices for fowls is strongly desired by the association, but it appears impossible at the present time. Some fowls are handled by the association, but with little better success than if members disposed of them in the regular way. Some fowls are sold to the same trade that takes the eggs and a few customers buy dressed fowls, but this is far from being enough to take all the fowls the members of the association have to sell.

Mr. Foss, the manager, states that the only way he sees out of the poor poultry prices is for other organizations like those at Tulare and Visalia to unite in establishing a city marketing agency, by which farm poultry may be sold at as much better prices than those now being secured as present Tulare egg prices are better than those received under the old system. Meanwhile, the advance in egg prices has been enough to make the poultry business as a supplement to dairy farming really boom. It has reformed the evils that poultry scientists have long thundered against, demonstrating the fact that to improve farming methods, prices for farm products have to be improved and then further urging is not needed.

USES FOR THE EGG.

For inflamed eyes the white of an egg beaten to a froth is soothing.

The yolk of an egg rubbed into the hair and rinsed out with warm water will cleanse both hair and scalp.

For a boil or inflamed place on the body cover the lining membrane of the egg. It will draw out the soreness.

White of an egg spread on the skin where a mustard draft is to be applied will prevent the severe burning.

To prevent the juice of pies from soaking into the crust, rub the bottom crust well with the stirred contents of an egg.

The white of an egg spread over a burn will exclude air.

White of an egg for sealing packages is the equal of mucilage.

To ascertain the freshness of an egg without breaking it, hold it before a strong light and look directly through the shell. If the yolk appears round, and the white surrounding is clear the chances are that the egg is fresh. Or drop it into water; if the egg sinks quickly and remains at the bottom it is in all probability fresh, but if it stands on end it is doubtful, and quite bad if it floats. The shell of a fresh egg looks dull, while that of a stale one is glossy.

TO BREAK UP BROODY HENS.

It frequently happens that there are a great many sitting hens that it is desirable to break up during the summer. For this purpose nothing exceeds the slat bottomed coop raised from the ground that the air may circulate freely under the hen when she is placed in the coop. As long as the sitting hen is given a chance to sit in a nest on the ground, where she can brood herself and keep her body in a state of great heat, it is hard to break her off from the desire to brood. But when she is placed in a slat-bottomed coop, which is raised from the ground, there is no possible chance for her to overheat her body, and in a short time she loses her brooding desire. It often requires only a few days of this treatment to break them. A coop made for the purpose is very inexpensive and a great convenience in every poultry yard.

GOOD POULTRY HINTS.

The smaller the poultry quarters, the cleaner they must be kept.

Do not simply throw the water out of the drinking vessels, and put in fresh water, but wash the vessels thoroughly every time you change the water.

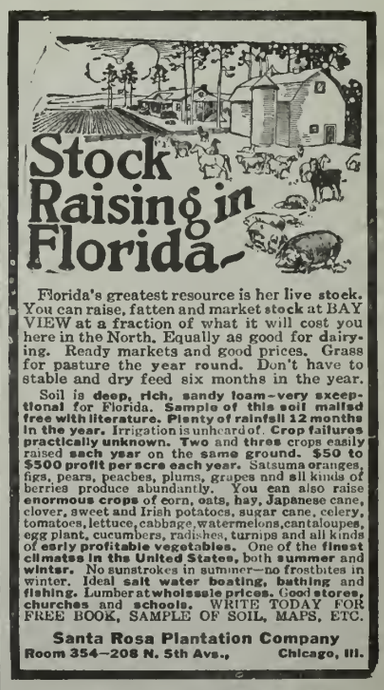
A cheap thing so many times scantily furnished or not furnished at all is sharp grit. It would seem that a thing so easily provided would be in constant supply, but quite often these are the very things left undone.

Water in fresh and constant supply is a thing that must be supplied if chicks do well, or if eggs are furnished as they should be. An egg contains quite a large per cent of water, hence water must be supplied in plenty.

Fresh buttermilk is recommended for diarrhoea in chicks, some saying it will cure bad cases.

During hot weather use care in keeping vessels containing buttermilk sweet, and in placing same in the shade. Always give the milk before it becomes popping sour.

The poultry yard is a good place for the boy to begin a real partnership in his father's farm.



My Results With Indian Runner Ducks

By Al Buker, San Francisco.

Having had several years' experience with white Indian Runner ducks, I will tell of the results I have had with them. My white Indian Runner ducks were about seven months old when they started to lay, and were allowed to run in an open yard about 50x50 feet in both summer and winter without any shelter and under these conditions they laid continually for about eight months.

In the following season, beginning with the winter months, I built a

A Prize Pen of White Indian Runner Ducks Owned by Al. Buker.

house about 10x20 and bedded the floor with stable manure, driving the ducks in from the night's rain and wind, and found the production of eggs much greater than when the ducks were out in the open, satisfying myself that with proper care and shelter and with the bed of manure supplying warmth, wonderful results could be secured. The ducks laid all through the winter months when eggs are so scarce and high in price, and were very profitable, 65 and 70 cents a dozen being received for the eggs.

Before sending them to market I dampened a cloth with vinegar and washed them, showing their color to be a pure, pearly white, the eggs being a little larger than a hen's egg and shaped about the same.

I have had some extraordinary results, having had enclosed a pen of six ducks and gathering six eggs in the morning, and on several occasions during the week I would gather an extra one in the afternoon, making a total of seven for the day.

In another pen, having six ducks, and keeping a record of them for six months, beginning February 1, they laid 900 eggs by the end of July, an average of 150 eggs each.

On another occasion I noticed that one of my ducks became broody and that she set on a nest in the corner on the ground during the day, so I decided to set her. I supplied her with twelve eggs and partitioned off a corner so that she would not be bothered by the other poultry, and allowed her to leave her nest once a day. She would eat, sprinkle herself with water and return to her setting just like a hen. She set the full limit of the time required, hatching ten ducklings out of the twelve eggs, brooding them faithfully and raising eight out of the ten.

I find it very easy to raise ducklings, learning from the different methods I have tried, having experimented with two broods of ducks, ten with one hen and eleven with another and placing them in different pens.

To one pen I gave soup made from plucks which was mixed with a mash made of two parts wheat bran, one part corn meal and a little sand. The whole was mixed up moist and fed three times a day for about three weeks. To the other pen I made a mixture of one part corn meal and two parts bran, moistened with skim milk and a little sand being added. At the end of three weeks I found that the ducklings receiving the soup were much larger and vigorous on account of getting a little more substantial ration.

After three weeks I gradually add about one-twelfth part meat, increasing the amount until at seven weeks I add one-sixth part meat.

I also have running water for them all the time, having a board with an inch and a half strip nailed on top which forms a square, and then a wire screen stretched from one side to the other with an outlet in the bottom of the board to let the waste water run off. I place the water fountain on the screen and have the water dripping in very slowly and what is wasted by the ducklings falls through the screen into the outlet, keeping the floor from getting wet.

As I have had several years' experience with them, these statements I make are actual facts.

In mating I have six ducks to the drake, who is a year older than the ducks, thus getting a better production of fertile eggs. The results are gratifying, as I have had on an average ten fertile eggs out of twelve. I test them on the seventh day and am positive of my assertions, having given the matter careful consideration. With the above mating you will find that the eggs prove fertile, and when the eggs are hatched you get strong, vigorous ducklings, which, with proper care, grow very fast.

It is necessary to state that matured ducks require very little attention to be free from disease and vermin. I give them an abundance of drinking water, having found from experience that water for swimming gives poor results in egg production. In the morning I give them a mash composed of three parts of wheat bran, two parts corn meal, three parts middlings and two parts plucks ground fine, also some greens, consisting of cabbage leaves or lettuce. During the day they have a dry mash in front of them all the time. In the evening I accommodate them with either cracked corn or wheat and have an abundance of grit for them.

The troughs in which they are fed are made of galvanized iron with an opening in both sides so that they can eat freely and a door on top to place the feed in. These troughs are very easily cleaned and kept in a sanitary condition and are very convenient. I might state that I have been very successful with my ducks, having won several prizes in the San Francisco Poultry Show. The accompanying picture shows some of the 1913 prize winners.

FEATURES AT CITY SHOW.

At the show to be given by the San Francisco Poultry, Pigeon and Pet Stock Association, December 8 to 13, a display of dressed poultry is to be a special feature and all phases of this work will be displayed. To assist buyers and sellers of stock, a free sales secretary will also be on the job. No charge will be made for this work.

In fancy and utility exhibits some of the prize stock of America will be entered. Besides this there will be worthy exhibits of children's pet stock, rabbits and pigeons. The floor space has been doubled and new features added.

The dean of the judges will be C. S. Beyers, the famous Orpington authority of Indiana.

There's no use hatching eggs if the chicks don't live. It takes strong breeding stock to throw thriving chicks.

Washing eggs in 95 per cent alcohol before putting them in the incubator will sometimes prevent white diarrhoea.

Young men for war, and old wise (?) men to start the trouble.

10,000 Persons Would Not Now Be Homeless If All Salem Buildings Had Been Roofed With

J-M ASBESTOS ROOFING

"The Roll of Honor"

Profit by the lesson of the great Salem, Mass., fire. Don't put wooden shingles on your buildings!

If you do, you will have to trust to luck that fire will not come your way.

And you will find them extremely expensive, too, because they have to be constantly repaired.

If you value safety and *real* economy, use J-M Asbestos Roofing.

It resists fire—never requires painting or repairing—and is absolutely and permanently water-tight.

Get roofing service out of a single investment that pays dividends in fire protection and freedom from bother and expense for years to come!

GET J-M ASBESTOS ROOFING!

J-M TRANSITE ASBESTOS SHINGLES also provide *absolute* fire protection and add to artistic appearance by their attractive colors and rough edges.

J-M Regal Roofing is recognized as the most serviceable brand of woolfelt roofing.

The Evening World.

SHINGLES TO BLAME

MASSACHUSETTS is still bending a thoughtful brow over the ruins of Salem.

Everybody agrees that the one thing which contributed most to the spread of the fire was—shingles. House after house burst into flame the instant the rain of sparks touched the tinder-like shingle roofs.

• • •

—a dry, weathered shingle makes about the finest kindling known. In a closely populated town a brisk wind carries flames over shingle roofs as fire sweeps over sunburnt prairie grass.

The Bay State is using the Salem fire to start a strong argument against shingles. It will do the rest of the country no harm to listen.

Write Nearest Branch To-day for Description Booklet 4297

H. W. JOHNS-MANVILLE COMPANY

Manufacturers of Asbestos Stucco; Pipe Coverings; Cold Storage Insulation; Water-proofing; Sanitary Specialties; Acoustical Correction; Cork Tiling, etc.

Albany, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Indianapolis, Kansas City, Los Angeles, Louisville, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Syracuse 2646

THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED
Toronto Montreal Winnipeg Vancouver

GUARANTEED FROM THE ROOTS UP.

The FRESNO NURSERY CO. INC.

HONEST·NURSERY·STOCK

This is the season of year to think about the Nursery Stock you will need for next Winter's Planting. Submit us a list of your wants for quotations. We are headquarters for FRUIT TREES and GRAPE VINES. "Guaranteed from the Roots Up," and can please you in quality and price. Beautiful, Large Catalogue, Illustrated and Full of Information, mailed upon request Free. Address

THE FRESNO NURSERY CO., INC.,
Box 615, Fresno, Cal.

MRS. HEARST CONSIDERS PROHIBITION A MISTAKE.

Hacienda Del Pozo de Verona,
Pleasanton, July 27, 1914.

Mr. G. E. Lawrence,
Room 501, 12 Geary Street, S. F.

My Dear Sir:

I regret the delay in replying to your letter of July 17th.

I am not and never have been in favor of Prohibition. The W. C. T. U. people have asked me at different times (not recently) to help them, and I have always declined, not that I am not in favor of temperance, but because I did not think their methods are always wise or likely to achieve the end in view.

I am opposed to intemperance, but not to a moderate use of wine, and I am convinced that the countries where wine is freely used are not those where the highest rate of intemperance prevails.

In this wine-producing State especially, I think it would be a mistake and do much more harm than good to establish Prohibition.

Yours very truly,

(Signed) PHOEBE A. HEARST

Epistles of an Automobile to Its Maker

By Thomas Howard — Epistle V

1—Whensoever the man and the wife be joined together in an auto partnership will there be troublous times.
2—For the man thinketh of the mechanical inferiority of woman, and the woman depiseth the stupidity of man.
3—Moreover the man leaneth to pyrotechnic display, the woman preferring the quiet absorption of the public's right of way.
4—So she thinketh a wide open exhaust be a noisy expression of the man's idiocy, and he believeth her calm disregard of the city's traffic ordinances a menace to public safety.
5—Thus it came to pass after they paid good shekels unto the rescuer of my latest calamity, Spark—Jones saith to his wife.
6—This day I drive, for, of a verity, I like not the thought of thou spending mine life insurance at any early date.
7—Neither do I desire to absorb the liability of thine funeral bill, and the loss of mine car at the same time.
8—Profound is the wisdom of woman, for she abideth the time of a man's undoing in smiling silent patience.
9—That she may say. I told you so.
10—Therefore, Maude Sparke-Jones answereth not her spouse and letteth him drive without further comment.
11—Which surpriseth him, so he becometh nervous in his endeavors, anticip[illegible] a vexatious time from th[illegible] [illegible]er silence.
12—Now ca[illegible] [illegible]and as the crack of a gun.
13—The tire hath blown out, she sweetly said.
14—Back fire in the exhaust, he corrected.
15—And he driveth me on, albeit the steering became difficult.
16—So I waddle.
17—And I wobble.
18—In zigzag imitation of a drunken sailor's tracks.
19—Saith the she Spark: Methinketh we go through the fence should the road narrow.
20—The he Spark—sparkleth. Then drive it thineself, he saith.
21—And he stoppeth demanding she taketh the wheel.
22—To which she objecteth.
23—And he insisteth.
24—So he rileth her when he twitteth her.
25—Thus in anger she taketh mine wheel.
26—But I steer not, and I persist in crawling away from the beaten trail.
27—So she stoppeth, and taketh a wrench from the box.
28—And he lifteth mine hood and examineth the carburetor.
29—But she saith the trouble lieth in the steering control.
30—And demandeth that he fetcheth another wrench to tighten the nuts.
31—Which they do, then she noticeth a front tire is flat.
32—And she saith: John Spark—Did I not tell thee so.
33—What saith the Prophets. To balance fortune by a just expense, join with economy, magnificence.
34—So the economy without an extra tire be no economy.
35—And is not such an especial truth if thine wheels be fitted with a patent detachable rim.
36—Now it came to pass through an hour's hard labor mine demountable rim refuseth to demount.
37—Then it suddenly undetacheth it from the rim, and he landeth a ludicrous mass on his back.
38—And she, seated on the road side, laugheth loudly at man's clumsiness.
39—So he be both angry and sore.
40—Then he attempeth to remove the detachable rim from the tire.
41—And curseth its inventor.
42—And wisheth for the extra spare which economy at the time of purchase proclaimed unnecessary.
43—Then she saith: I advised thee to purchase one, if only for the trimming of the car's sake,
44—But thou wouldst not.
45—As the worm turneth, and the cat raiseth its back and hisseth,
46—So even a man in auto partnership with a wife resenteth the woman's accusations and chidings when he struggleth with demountable rims.
47—And he saith: Thou liest, for thou sayest an extra tube could be all thou would ask for.
48—Oh, Mother, she cried, thou said thou liked not his looks on the day we were wed.
49—Yet I never thought he could call me liar.
50—So she leaveth him, prophesying God would requite his iniquities.
51—And he voweth he would sell me at the nearest garage.
52—And finding no manner of way to loosen the demountable rim from the tire, he driveth me in on the wheel rim.
53—With a great disgust in his soul, and a fear in his heart, for he was uncertain regarding the welcome which awaited him home. Selah.

THE RESULTS OF CO-OPERATIVE BUYING

(Continued from Page Four.)

wire for modern plumbing and electric lighting; pumps and engines or motors fo rirrigating; washing machines for the women of the house, and so on. There has been more money for fertilization, more money on account of fertilization, more money on account of all the improvements made, and the club has grown marvelously in membership, influence and lines of purchase.

Ukiah is the center of a fine fruit district and pears especially are going ahead rapidly. It is only a question of time before some marketing agency will be started for these, and possibly for prunes. Mendocino wool occupies a prominent position on the market and buyers ride around the country at big expense dickering with wool growers to get wool at the lowest price they can, the wool grower paying the automobile bills and salaries in the lower cost of the wool. The plan is being considered of having all wool of members turned in at the warehouse and having the buyers come direct to the warehouse and buy, putting on the price what is now spent in time and automobile expense.

A good many hogs are raised, likewise quite a few sheep in small flocks on farms. The hogs and sheep on each place are not enough to make a carload, and buyers now and then have to travel around the country buying enough to make a carload. This expense comes out of the price of the sheep or hogs, and often also a farmer may have a few animals all ready for the market and the buyer will not be ready. It would be simple to have the club appointed as agent or buyer for a packing house. When a carload was wanted the manager could telephone to members who had stock all ready and make up a carload from the office at no expense and with members getting full price. This is also being considered. The only trouble is that the club is growing so fast that all the opportunities cannot be taken advantage of, but if it continues growing as it has the last two years, in two years more it will be as much more to tell as has been told already, and that is much less than might have been told.

PRESSING WOOL SKIRT.

To successfully press a wool garment so it will not be shiny on the right side, keep wool next the outer surface while the iron is being applied. If the skirt is plain it may be folded and pressed on the wrong side, otherwise pin a strip of wool over the cotton ironing board. Wool absorbs heat, while cotton reflects heat, thus causing the surface exposed to it to become scorched.

If the garment is pressed on the wrong side, a cotton cloth should be spread over the surface. Never put a hot iron directly upon the wool. If necessary to press on the right side, cover with a wool strip, then with a cotton one. Dampen with a cloth wrung out of warm water.—DELILA DERRICK, Sunnyvale, Cal.

If you have a pencil and pocketbook with you when going around the machinery, in which the little parts and sizes of bolts and nuts required may be noted down, it is probable that at least one trip to town in the busy time will be saved.

25 Xmas, N. Year & Greeting Post Cards 10c—Try us and be satisfied. Ger. Am. Post Card Co., Dept. W, Burlington, Ia.

FARMERS' CLASSIFIED MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Baby Chicks—S. C. White Leghorns from tested hens of proven merit, mated to our pure blooded Wyckoff cockerels; bred for heavy laying for more than 30 years and universally recognized as the best paying strain of fowls ever produced. If you would have the highest quality at moderate prices, place your order with **G. & C. Poultry Farm, Rural No. 1, Sonoma, Cal.**

Sheppard's Famous Anconas — The world's best. Single or rose comb. First at world's greatest shows, including London, England; Madison Square and Cleveland. Greatest egg record, average 256 for entire flock. **Cecil Sheppard, Berea, Ohio, president International Ancona Club.**

All the Rhode Island Red Baby Chicks You want—Best all-round chicken there is; good winter layers and the only kind for broilers; special rates by the 1,000; order now at the only exclusive **Rhode Island Red Hatchery, 2162 48th ave., Oakland, Cal. Phone Merritt 2172.**

Hicks' Jubilee Hatchery is now booking orders for Sept., Oct. and months following; Circular for the asking; NO PULLET EGGS USED IN OUR HATCHERY; A1 CHICKS are the ONLY ones we ship. **Hicks' Jubilee Hatchery, Route 2, Box 22, Petaluma, Cal.**

Barred Plymouth Rocks—Winners at New York, Kansas and California shows. Eggs for hatching and choice stock for sale. Eighteen years breeding Barred Rocks exclusively. Write for folder. **"Vodden's Rockery," Los Gatos, Cal.**

White Leghorn Hatching Eggs and baby chicks from scientifically selected and mated breeding stock. Heavy laying strain. Place your order now for fall delivery. **The O. C. McDonald Poultry Ranch, King Road and Jefferson St., San Jose.**

Baby Chicks and Hatching Eggs—Rhode Island Reds, settings, hundreds or thousands; 1,800 breeders, heavy layers; finest plant in California. **Pebbleside Poultry Farm and Hatchery, Sunnyvale, Cal.**

Order Now! Thoroughbred bronze turkeys from largest turkey ranch in Stanislaus co.; large spring gobblers and hens for breeding stock. Address **Crows Landing Turkey Ranch, Crows Landing, Cal. Box 227.**

Albert M. Hart, Clements, Cal. (successor to Ed. Hart)—Mammoth bronze turkeys. Bargains offered on old stock for short time only. Correspondence invited.

Pine Tree Poultry Farm, Los Gatos, Cal.—Hatching eggs from S. C. White Leghorns; selected stock; $6 per 100; $50 per 1,000; order now. No baby chicks.

Petaluma Hatchery—Now booking orders for December and January. Early chicks bring big money. Send for circular. **L. W. Clark, Petaluma, Cal.**

Incubator Chicks—White Rocks and White Leghorns; high-class stock. Send for booklet of prices. **Mahajo Farm, box 597, Sacramento, Cal.**

The Buff Orpingtons You Want—Big bony cockerels and fine pullets; prices reasonable. **Ernest L. Wilder, Los Gatos, Cal.**

Trapnested White Leghorns—Bargains in cockerels from heavy layers; only $1. **Arthur R. Schroeder, box 22, San Gregorio, Cal.**

Incubators, Brooders, Supplies,- Smith's Universal Chick Feed. Hogan's "Call of Hen," $2, prepaid. **F. F. Smith & Co., 1006 J St., Sacramento. Circulars.**

Ormond Strain White Wyandotte Cockerels, 6 months old, limited number, $2.50 to $5 each. **Ormond Ranch, Corning, Cal.**

Crowley's Everlay Egg Mash has met with immediate success. Why not try it.

For Sale—Three months' old and up White Leghorn Pullets. **P. O. Box 442, Petaluma, Cal.**

For Sale—Bourbon Red Turkeys, hardiest breed. **C. P. Gutkrie, San Jacinto, Cal.**

LIVESTOCK

Prize-Winning stock of Poland-Chinas and Mulefoot Swine—Fine boars of service age for sale. Mulefoot pigs, both sexes. **Rivergarden Stock Farm, Grafton, Cal.**

Mules for Sale. Phone **Oakwood Park Stock Farm, Danville 121, or Mount Diablo Park Co., San Francisco, Kearny 3670.**

Pacific Guernsey Herd offers a few very choice young bulls. **C. S. Rasmussen, Loleta, Cal.**

Shetlands—Young, unbroken ponies cheap through November. **Yocum & Sons, Hellotu, Cal.**

Sunnyside herd—Registered Holstein cattle. **R. F. Guerin, R. 3, box 58, Visalia, Cal.**

Duroc Jersey Boars—All sizes, ready for delivery. Address **Lindquist Bros., Turlock, Cal.**

Berkshires Registered Boars and Sows ready for delivery. **G. Casey, box 7, King road, San Jose, Cal.**

Several pair Breeding Foxes. Write for circular. **Reid Bros, Bothwell, Ontario, Canada.**

Registered Berkshires $10 at weaning time. **W. D. Good, Mt. Vernon, Wash.**

RABBITS

Pedigreed Rufus Red Belgians—Stock from prize winners; get my prices. **Sinnott's Rabbitry, successor to Hare and Feather Yard, Trinity St., Fresno, Cal.**

Belgian, New Zealand and Black Flemish Rabbits—Scored and sold on merit; catalogue free. **Caldwell Bros., Los Angeles, Cal., Box 613.**

New Zealand Reds, thoroughbred, from prize stock; Does bred, and young Bucks. **Mrs. C. A. Richey, R. D., Box 557, Los Angeles, Cal.**

Hares—Thoroughbred Belgians, with or without pedigrees. **The Old Hickory Supply Co., Dept. 1, San Francisco and Los Angeles.**

DUCKS

Ducks—High-Class Mammoth Imperial Pekin Ducks and Indian Runners for breeders. Will also have eggs for sale later in season. **Stone Canyon Poultry Farm, P. O. Box 348, Sawtelle, Cal. Sunset Phone 565 M, Santa Monica, Exchange.**

Mammoth Pekin Ducks for breeding, $1.25 to $2.50 each—Heavyweight Flemish Giant hares; best stock. **Mrs. Morris, Ocean View Pk., San Francisco.**

FROGS

Frogs—Investigate breeding big Eastern bullfrogs; unusual possibilities west of mountains. Tremendous demand. **Aquafieco, Seymour, Conn.**

PHEASANTS

Chinese Ringneck Pheasant, $2.50 each, either sex. **Powars' Pheasantry, 935 So. Tenth St., San Jose, Cal.**

BEES AND HONEY.

Beekeeping Pays Big—Price list, bees, instruction books, etc., free. **Spencer Apiaries Co., Box 16, Nordhoff, Cal.**

HOUSEHOLD SUPPLIES

Home Comforts and Christmas Gifts—Bargains! Illustrated catalogue free. **Kimo Specialties, Dept. C, Box 392, Vallejo, Cal.**

AGENTS WANTED

Will pay Reliable Man or Woman $12.50 to distribute 100 FREE pkgs. Perfumed Borax Soap Powder among friends. No money required. **L. Ward Borax Co., 210 Institute Pl., Chicago.**

Spare time—no canvassing—Local information, news, names, etc., wanted. Exceptional proposition for stamp. **"Nisco"—HFG—Cincinnati, Ohio.**

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695, Lockport, N. Y.**

REAL ESTATE

For Sale—Sacrifice, 80 Acres, all in first-class stand alfalfa, well fenced, house, new barn, within 3 miles of postoffice. This place is in the pink of condition; this will stand the most rigid examination, not a run down place, but one of the best in the Imperial Valley; this place must be sold at once, and in order to move it the owner has placed this property with me at $130 per acre, $3,000 cash, $1,750 November, 1915; $1,750, November, 1916; balance five years' time. I have lived in the valley ten years, and will say this is the best bargain I have had to offer during that time. **King L. Kendie, Agent, 103 Orange st., Redlands, Cal.**

For Sale—140 acres near Middletown, Lake county, Cal.; 30 acres cleared, 1,000 bearing almond trees, 500 bearing olive trees, assortment of other fruits; valuable water right; pumping plant in operation; complete equipment for making olive oil and preparing olives; 3 1,200-gal. iron tanks, farm boiler, 200 fruit trays, farm tools, work wagon, spring wagon, buggy, double harness, single harness, good buildings; house furnished; crop of 4 tons of olives included if sold before Dec. 1, 1914. Price $4,500. **Granville Libby, Middletown, Cal.**

Victoria, Australia, Wants Settlers—Special inducements; Government land, railways; free schools; cheap irrigation; 31 years to pay for farms adapted to alfalfa, corn, grains, fruit, etc.; climate like California; ample markets; reduced passages; special excursion being arranged. Free particulars from **F. T. A. Fricke, Government Representative from Victoria, 687 Market St., San Francisco, Cal., Box T.**

For Sale—Stock, grain, fruit, 480 acres, Mariposa county; free range, rural delivery, telephone, railroad convenient; fine climate, grain without irrigation; sufficient water to irrigate large orchard; house, barn, seven miles fencing; $12 per acre; part cash; railroad fare refunded if not as represented. For particulars address **Short & Ward, Varain, Cal.**

Send Address, Detailed Description and Easy Terms on 5-acre homes, also large fruit and grain farms near Vacaville; no malaria. I tell the truth. Big bargains in fruit farms, 50 miles north San Francisco; good water; telephone and power lines at hand. **Big Lander, R. 2, box 83A, Vacaville, Cal.**

40 Acres, Turlock.
Have several 20 and 40 acre tracts of elegant soil, 20 feet deep, no alkali; near Turlock and on R. R. Will give special price and terms to those who will go on and improve the land. Write to or see **Mr. Don Carlos, 595 Market st., San Francisco.**

The Ansel Litchfield ranch near Lathrop, San Joaquin county; 337 acres are offered for sale by his administrator. Price $33,700. No better producing land in the San Joaquin. Abundant water. Adapted for fruit or alfalfa. An exceptional property and bargain. **C. B. Younger, Santa Cruz, Cal.**

Forced Sales—A skillful investor buys when the other fellow is most anxious to sell; send for lists of San Joaquin forced sales and exchanges. Partially improved places as cheap as bare land. Great bargains in right now. **Victor Burke, Los Gatos, Cal.**

Relinquishment for sale—320 acres level land half mile from railroad station. Crops prove quality of soil; plenty of water. You do not have to live on this to own it. One snap. Address **P. O. box 755, Pasadena, Cal.**

A Bargain in my 6,000-acre ranch in Nueces Canyon, well improved, well watered, 10 miles of new railroad; exchange part drygoods. **R. W. Lane, Laguna, Texas.**

Ranches, homes, acres, lots, exchanges. Send for free list. **Wilson Bros., Santa Cruz.**

For sale—75 acre alfalfa ranch near Woodland. **Box 48, R. F. D. No. 3, Woodland, Cal.**

Oakdale Irrigation District, Stanislaus county, sacrificing alfalfa land under ditch. **Stoddard, owner, Oakdale.**

120 acres—Yolo county; house, barn, wells; 200 cords timber; $20 per acre. **C. Johns, Yucaipa, Cal.**

For Sale or Rent—30 acres improved, 16 acres alfalfa. **V. D. Ross, Manteca, Cal.**

For Sale—Seven-year lease on 5-acre chicken ranch, stock and equipment. Write **F. E. Schroeder, Alton, Cal.**

3,300 acres with sheep for sale; improved. **Owner, box 535, Hopland.**

REAL ESTATE EXCHANGES

Prosperous Oregon newspaper (no opposition), worth $5,000, to trade for improved farm of equal value. **Box 6, Joseph, Oregon.**

Exchange—10 to 30 acres fine fruit and alfalfa land, with water, for Mascot copper stock or bonds. What have you? **Owner, 394 50th st., Oakland, Cal.**

Send for my lists of Santa Clara valley and San Joaquin valley exchanges. **Victor Burke, Los Gatos, Cal.**

For Exchange — Modern 8-room furnished house, stone foundation, garage; corner lot, clear, at Goldfield, Nevada. What have you? Address **26 Zephyr ave., Venice, Cal.**

Do not delay—List your property for exchange now with **Johnson & Temple Exch. Dept., San Jose, Cal.**

REAL ESTATE WANTED

Farms Wanted. We have direct buyers. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property Free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted—Good farm. Well located. Give description and price; from owner only. **Staal, Box 754, Chicago.**

FARM LOANS

6 Per Cent Loans obtainable on farm, ranch or city property. To improve, purchase or remove incumbrance; liberal options; 5 years before making payment on principal, etc. For the proposition address **Assets Dept., at 1410 Busch Bldg., Dallas, Tex., or 422-423 First National Bank Bldg., Denver, Colo.**

TREES

Mission Olive Tr [illegible] for March and April delivery; wi[illegible] be two years old; to be sure of getting Missions, I only plant cuttings from trees I raised 30 years ago; be sure of species before planting. Missions are considered the best. **W. A. Hayne, Marysville, Yuba Co., Cal.**

Bartlett Pear Trees—One year, 4 to 6 ft., $14 for 100; $125 for 1,000. Apple trees, 4 to 6 feet, 7 cents each. Guaranteed to stand inspection. Write for catalogue. **Southern Oregon Nursery, Yoncalla, Oregon.**

For Sale—Grafted Washington Navel orange, lemon and Mission olive trees; clean, vigorous, well rooted and healthy. Special price for large order. **I. Shoda, representative of largest Nursery Association, 230 M st., Sacramento, Cal.**

Olives Our Specialty—Fine thrifty trees of all sizes at "bed rock" prices. **Exeter Nurseries, Exeter, Cal.**

SEEDS, PLANTS, ETC.

Get prices, plant now. **Luther Burbank & Mediterranean Spineless Cactus Plantation, San Dimas, Cal.**

EDUCATIONAL

We teach you how to Tan, Dye, Blend all kinds of Furs and make them into garments. How to mount your own specimens. Send for our free booklet. **The Oregon School of Taxidermy, Lakeview, Ore., Box 525A.**

Self-Instructive Books — Agricultural, mechanical, scientific, business, art, literary; any subject; lists 6c. Mention your subject. **C. Higene Co., 2441X Post St., San Francisco.**

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

SALESMEN WANTED

Salesmen—Earn $2,000 to $4,000 a year. New combination, 12 tools in one. Sells at sight to contractors, farmers, teamsters, fence builders, threshers, miners. Weights 24 pounds, lifts 3 tons. Stretches wire, pulls posts, hoists, etc. Chance for men who want honest money making proposition. **Harrah Manufacturing Co., Box M, Bloomfield, Ind.**

Wanted—Salesmen to sell my fast-selling pocket garment hanger, at 25c, at 100 per cent profit; other fast-selling noveities. **Dan. I. Murray, 3 Maiden Lane, New York.**

THE FARMER'S MARKET PLACE

MISCELLANEOUS—FOR SALE

AAAAAAAAAAA — Headquarters for Building Material, foundation to shingles—**Symon Bros., 1501 to 1525 Market st.**—Rough dimension timber, long lengths, $11.50 M feet; short, $8 M; sheeting, $10 M; flooring, $13 M; T&G ceiling, $16 M; rustic, $18 M; $25 up to $35; extra star A star redwood shingles, $1.50; cedar, $2.25; shakes, $11; large glass booth sides, 65c each; new flooring, $18 M; new rustic, $23 and $25 M; new rough pine, $13.50 M.

40 French plate mirror mantels, $12.50 each.

New and Second Hand—Toilets, bathtubs, sinks, lavatories, boilers, cement trays, gas heaters, pipe and fittings, Davis windows, single sash, electrical material, chicken netting, new gal. corr. iron Ready Roofing, best on the market, all prices. Slightly damaged new goods at ½ price.

Note—The above material and quotations fully guaranteed and f. o. b. San Francisco; car lots special rate. Be not deceived by false advertisers; the only proof to those in the country is seeing; if impossible write to an acquaintance in the city. We have a full half block, yards and warerooms open for inspection; compare us with others; our prices for up-to-date serviceable goods are the lowest; we resort to true statements and rely on the merit of our stock, and your judgment. Having the large stock, yards, more men, own teams, we are fully equipped to render the best and most efficient service as to promptness, grade and general satisfaction. We solicit your confidence and orders. **Block 11th and Market sts., San Francisco.**

Second-hand and New Water Pipe—All Sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Buy your Belts from **California Belting Company, 1459 Mission st., San Francisco.**

One Hundred 5-cent Owl Cigars prepaid for $3.85. **Frank J. Case, Richmond, Cal.**

For cedar posts and hop poles write **G. R. Kirk Co., Tacoma, Wash.**

REAL ESTATE

GRAND BARGAIN!

For sale—80 acres, 9-year vineyard, heavy bearing, best variety of grapes; subsoiled land; no alkali or hardpan; property fully equipped, ready for farming; located 8 miles east of Fresno, 2 miles south of Clovis; half mile to railroad, packing houses and winery. To appreciate this property it must be seen. Deal with owner direct. **I. Kinsel, Fresno, Cal.**

Must Sell at Once—148 acres in Los Banos dairy district; only $110 an acre; 40 acres in alfalfa, fenced hog-tight; house, barn; windmill and tank; 4-wire fence around whole place; all hay on ranch goes with it; other land in vicinity sells at $200 to $250 an acre; this is the best buy in the State; owner must raise $6,000 at once; balance on long time at 6 per cent. Address **owner, box 24, South Dos Palos, Cal.**

Big Farm List Free—With photos; farms in many States; farmers' bargains with stock and tools included; dairy, truck, poultry, orchard and grain lands; deal direct with owners. Their address free. **National Farm Exchange, Oakland, Cal.**

Excellent Fruit and Truck Garden Lands in Eau Claire County, Wisconsin.—Wild lands $15 to $20 per acre; orchards 50 years old in vicinity; telephone and mail service. Ask for Fruit Book No. 9. **Land Department, Soo Ry., Minneapolis, Minn.**

Free—"True Blue" 1915 booklet. Tells the "How," "Why" and "Where" of overlooked State and Government land bargains. **Write California State Land Information Bureau, Sacramento, Cal.**

To Lease—700 acres of farming land in Santa Maria valley; terms. Apply **F. J. Etcheverry, Ramona, Cal.**

REAL ESTATE EXCHANGES

For Exchange—Good income property in Santa Clara for land. **Address owner, 714 Main St., Santa Clara, Cal.**

MACHINERY AND SUPPLIES

One 5-ton, low-head truck, with cover; truck in good running order; top new; worth $200; sell $75; bed floored with sheet steel. One 4-h.p. **Foos** engine with or without 2-inch centrifugal pump, foot valve, pipe and belting; in good order; $95. **J. S. Bogart, Box 577, R. D. No. 158, Santa Clara, Cal.**

Howell Gasoline Traction Well Driller, 800-foot capacity, fully equipped and in good repair. Address **Clarke & Davidson, 78 6th St., Chico, Cal.**

Second-Hand gasoline engines, from one h. p. to fifty h. p., and pump, any sizes; guaranteed. **W. Adams, P. O. Box 423, Sacramento, Cal.**

RABBITS

New Zealand Reds—The favorite hare. Everyone falls in love with them. They are kind and gentle, healthy and vigorous and excellent eating. Mrs. Richey's have won 12 ribbons this year. Have some fine young bucks from my prize winner. **Mrs. C. A. Richey, R. D. No. 8, Box 557, Los Angeles, Cal.**

Flemish Giants—"The real giants." Some extra fine youngsters nearly ready for shipment; price reasonable. Correspondence solicited. **J. H. Stubbe, Campbell, Cal.**

Belgian Hares—Bred does or bucks, $2.50 each. **D. A. Disbrow, Box 432, Sacramento, Cal.**

AGENTS WANTED

Young Man, would you accept and wear a fine tailor made suit just for showing it to your friends? Or a Slip-on Raincoat free? Could you use $5 a day for a little spare time? Perhaps we can offer you a steady job? Write at once and get beautiful samples, styles and this wonderful offer. **Banner Tailoring Co., Dept. 925, Chicago.**

AUTOMOBILE SUPPLIES

The Houseel Improved Ford Starter—Simple, absolutely safe, reliable, efficient, inexpensive. Every Ford owner needs one. **Write Box 193, Buffalo, N. Y.**

POULTRY

Black Minorcas, Barred Rocks, White Leghorns, R. I. Reds—Fine cockerels on hand. Booking orders now for chicks and eggs. **J. H. Stubbe, Campbell, Cal.**

Andalusians—If you want eggs get Andalusian. Eggs and stock for sale. **Daniel Calbreath, Monmouth, Oregon.**

HELP WANTED

Free Illustrated Book tells of about 300,000 protected position in U. S. service. Thousands of vacancies every year. There is a big chance here for you, sure and generous pay, lifetime employment. Just ask for booklet S-939. No obligation. **Earl Hopkins, Washington, D. C.**

BUSINESS CHANCES

Any intelligent person may earn good income, corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

SEEDS, PLANTS, ETC.

Spineless Cactus, $5 100 slabs. Specimen slab 20c, prepaid. **295 Page st., San Jose.**

DUCKS

Indian Runners, Prize Stock—Laying ducks from $1 up; hatching eggs $5 100. **Mrs. Nutman, 295 Page st., San Jose.**

REAL ESTATE WANTED

Farm Lands Wanted—I am desirous of buying a good farm direct from owner. Give details in first letter. **Box 92, Orchard and Farm.**

STANFORD UNIVERSITY HOLSTEIN HERD.

The Holstein herd of the Leland Stanford University ranch at Vina has the distinction of being not only one of the largest and finest herds in California, but the oldest. It was established by Senator Stanford more than 20 years ago as one of the important parts of the ranch. Other herds in existence at that time have been dispersed and sold and other noted herds of the present are all of more recent origin.

Like everything else Senator Stanford bought, the cows were among the best there was in quality and breeding and while he lived the herd received special attention. After his death it was kept going with the rest of the ranch, but no great efforts were made in its further development until about three years ago, when the present ranch manager, W. G. Stimmel, took charge, though a number of the finest animals were taken to the State Fair nearly every year. To take charge of the herd Mr. Stimmel secured the services of G. L. Stearns, who has done some fine work. All of the grades in the herd have been sold, also the older cows, and a bunch of fine young stock developed. This herd took a full proportion of the Holstein awards at the last State Fair, the far larger part of these going to young stock, bred on the place.

None of the development of the herd has been by the purchase of females, as the cows have nearly all been of the best of breeding. Most are of the Hengerveld stock. The bulls, however, are very naturally taken from as celebrated sires and dams as there are.

There are four herd sires: King of the Pontiacs 14th, a son of King of the Pontiacs; Dutchland Colantha Sir Armsby, a son of Colantha Lad; Genesseo Lad and Karel Vale Cornucopia. The first named bull was second at the State Fair, being just at the age when he seems rougher than he will be when he fills out fully, but he is a wonderful bull from a wonderful sire. The whole herd numbers 230, young and old of both sexes. About 100 cows are milking at present and the herd will be increased until there are 200 milking cows.

No official testing has been done for a number of years, but strict record is kept of production by weighing the milk of every cow every milking and making the Babcock test once a month. No cow, any age, is kept that cannot make 300 pounds and over in the year, ordinary milking season and without forcing.

One of the finest features of the place is the condition of the young stock, which are brought up on alfalfa pasture. The cows are bred to calve during the cooler part of the year, as summer calves have been hard to bring along properly. The calves are fed whole milk three to four months and are taught to eat grain as soon as possible, some grain being fed in connection with the pasture until about 10 months or a year.

The alfalfa pasture is not cut, except for the weeds. It is divided up into a number of small fields, and the young stock is always kept with others of an age and size and is moved frequently from one field to another so that the animals eat the field down clean without waste and always have enough good feed before them as well. There has been little thought of show ring stock on the place as breeding and production has been the main idea, but the showing made by the young stock is an indication of the results of good care and the right blood lines.

So long as they are being observed, some people don't care whether they appear sublime or ridiculous.

CALIFORNIA ASPECTS OF THE BREEDS

(Continued from Page 29.)

California, are making these great Holstein cows pay.

In California a given number of cows, of all sorts and sizes, are making milk to supply a given demand. The statement has often been made that these cows average less than 3,000 pounds of milk per head per year, and its production costs over 3 cents a quart.

Suppose the farmers of California were to start this year to change the situation by introducing Holstein-Friesian bulls. In two years they would begin to milk grades that would yield 4,000 or 5,000 pounds each year. In three or four years they could begin to beef their 3,000-pound cows. In five years they would be in possession of herds of 6,000-pound cows, and they would have to house, feed, milk and care for only half of their present numbers. In ten years they would own 8,000-pound to 9,000-pound cows and then a ten-cow herd would produce as much milk as the producer now gets from a thirty-cow herd. This successful solution of the dairy problem is offered by the Holstein-Friesian cow to the farmers of California, just as she has given it to the wise farmers of Holland.

The dairyman is a manufacturer, just as much as is the steel rail maker. Just as the manufacturer of rails plans to make the most and the best rails at the lowest cost by employing the best machines and methods on the best material, just so must the manufacturer of milk plans to make the most and best milk at the lowest cost by employing the best machines, which in his case are cows, and best methods, which are ways of housing, feeding, breeding and handling, on the best materials, which are foods given in balanced rations.

EGGS BY PARCEL POST.

It is stated that an association started by Farm Advisor Long of Johnson county, Missouri, for marketing eggs by parcel post is making a notable success. The eggs are packed in parcel post containers holding not less than six dozen eggs and are guaranteed by the farm bureau on pledges by the members to meet the requirements.

All cartons are marked, and consumers are requested to return all bad eggs to the bureau and receive a refund of any expense they may have incurred for them. Names of merchants handling these eggs are advertised two or three times a week and the price given.

An arrangement has been effected whereby merchants who can not fill orders will communicate with the nearest merchant. One consumer has arranged for 6,000 dozen per week. He will receive all the eggs not taken up by the parcel post shipment and pay a margin of about 4 cents a dozen. The producers are being organized into circles so that the eggs can be delivered to the grocerymen daily.

KEEPING STOCKINGS TOGETHER.

A pair of stockings or socks always part company in the washtub. One way in which a pair of either can be kept together is with the aid of an ordinary dress snap. Sew the ball of the snap on the outside of the top of one stocking and the socket on the other. When the stockings are put in the wash snap the pair together and there will be much time saved in sorting when they return from the laundry.—MRS. PIT. HAWKINS, Newcastle, California.

To keep scum from rising in putting down pickles in brine or beets in vinegar, always put in a small piece of horseradish; it will also keep them tart.—MRS. A. SCHUENEMANN, Peanut, Cal.

"Scraggles," the Outcast

By Bertha A. Kleinnan

If you have never seen an Indian pony—a poor, little, dwarfed, starved, gaunt-flanked creature with great sad eyes looking out from his shaggy hair—there is no use saying much about Scraggles. He was the homeliest, loneliest, hungriest little pony that the Bull Durham Stables ever turned out. Those stables had housed everything from a Jack McGinn, with his world-famed record, down to the awfulest scapegoats that only the Indians would buy. But not even an Indian would buy or barter for Scraggles.

Old Pima Buck, who vended ripe tomatoes at Christmas time, making daily trips from his well-kept truck gardens on the bottom-land, had dealt in more ponies than enough. He usually bought the wobbly kind that laid down in the harness after a few trips over the mesa. Then followed the barbecue and the horse-steaks eaten before the wigwams.

But Pima Buck looked with disgust upon Scraggles.

"Good picking," they urged at the stables where they liked to joke with Pima Buck. But the old man shook his long hair and showed his white teeth.

"Give the good feast to the crows."

So Scraggles was turned out.

Poor runted beast, orphaned in his babyhood, stunted by early weaning, hacked and nagged and wire-scarred, brought to shambles and rickets and hob-knees long before his time—truly he had earned the freedom of the desert, and thither he went, making slow stages out beyond the canals. No one followed him, no one waylaid him. Even the dogs left him alone, and the great expanse of desert with its carpet of golden poppies and the tender green filigree springing up after the spring rains, gathered him in and mothered him.

To the great half-way well which had been bored hundreds of feet into the earth, great bands of horses came every night to lave their faces in the flowing tanks. Half-wild stallions with their herd of prancing mares had often been decoyed there, safely into the canvas corrals, and there made captive. But no one troubled to rope Scraggles. He came and went, free as the cottontails that scurried from his path.

It was Yasika (Little Flower) who found him, pausing in her merry chase after the road-runner. She was far from home but the trackless desert had no terror for her. It was her playground, where she danced and sang with the wild abandon of her race. It was here she came to gather the mesquite beans and the crimson apples of the saguaro and the fat catkins which she stripped and shredded with her strong white teeth. She knew the home of the woodchuck where he slept with his clumsy body curled up like a muff. She had followed the bird-like trail of the deer-mice and peeped into the feathery nests where babies tiny as thumbs peeped back with their beady eyes. Here she challenged the saucy chipmunk, imitating his gossipy chatter and invading the chaparral where he sets up his breastworks and lives the life of a trained sentry. She knew the covert of the cottontail, where she hovers her nervous brood in a cozy nest all fur-lined from her own breast. She had felled the cactus shaft of the Elsahnaro to explore its topmost chinks, where the koko-owl hides her nest far up the thorny sides where no snake can climb. She had plucked the fruit from the prickly cups and quaffed the waterish sap that has saved many a life stranded on the desert. The woodsy flash of the road-runner, the scarlet plumes of the okatilla, the yapping of the prairie-dogs—these were part of Yasika's playground and no one molested her.

Scraggles had wandered into her domain, but Scraggles' tossing mane was a flag of truce. He invited no chase. He was contented in his new-found world of freedom and plenty. Yasika stole up ever so cautiously and laid her hand upon him. Scraggles had never felt the kindness of a child's hand. Pats and caresses had never been his portion, and with wide, meek eyes he stood still, sniffing slightly but otherwise showing no fear. Emboldened by his quiet, Yasika flung herself at a bound to his back and, digging her bare feet into his flanks spurred him into a gallop. O the glee of it! Scraggles had never heard such laughter, such clapping of hands, such gurgles of delight. It was as if the desert shouted and laughed about his ears and the spirit of it stirred his blood like wine. Youth came back to his shambled limbs and joy to his lonely heart. The scent of a thousand things lured him on and he sprinted away through the tawny grass with the light burden clinging to him.

She urged him river-ward, away from the prickly growths into the cooler thickets, and suddenly the river was upon them. She let him drink long and eagerly, the while patting and smoothing his shaggy mane where the thorns and cockle-burrs had made a sorry snarl. Then coaxing and cooing she spurred him gently into the full current of the stream. It was deep and wide and cold, but if Scraggles demurred it was only with a toss of his head and up he came bravely on the farther bank, shaking the foam and crystals from his coat. Yasika screamed with delight and again they were off, trampling the fringy arrow bushes and emerging noisily into the willow wattling that confined the reservation.

Proudly she dismounted at her father's wigwam, unprepared for the jeers and shouts of laughter that greeted her on every side.

"He is mine. I have found him. He has taken the river. O, the pet kaviyo! (horse)"

Kamatuk came out of the cache tent and scowled at his little daughter.

"Turn him away," he said harshly. "The scant food is for the field horses."

But Yasika raised to him the great windows of her eyes, begging and clasping her nut-brown hands together.

"I will feed him out beyond our own lands. Yea, even to the desert will I take him—only let him be mine."

Kamatuk scowled but he did not refuse. He strode away, for he liked not the jeers of the many idlers who had gathered about to survey the new comer.

Yasika led her pet away to graze upon the river bank. Every day she hastened there, teachig him to take the current without flinching and finding always newer and deeper soundings.

With the sultry July days came the rains—the glorious summer rains of the Arida Zona that are the salvation of the great desert, bringing up the six weeks' grass for thousands of famished cattle. To the eastward the clouds hung black and dense and the Great Salt Valley was glad, for the dam was filling up there in the mountain box and the winter's irrigation was assured.

When the sun came out a dozen little Papago children trooped over the bottom-lands to pile up driftwood on the banks. Yasika was there, bigger and braver than the rest, and swiftly she swam to the opposite bank to gather her bigger portion. But the call of the damp flats, the bruised sweet scent of a world of living things, lured her away from her tasks and she danced off through the tangle-wood.

That day the rain came with renewed fury, wiping out the brief sunshine and whipping the purling of the river into a sullen murmur. The children sought the shelter of hut and wigwam. The older Papagos snored by the fires. One only was missing and it was late in the afternoon when they remembered her.

The rain soaked his coarse strands of hair and sputtered down upon his feet as Kamatuk made his way from hut to hut, calling and scolding. They had last seen her on the far bank, waving her hands to the little folks who were afraid to follow.

Kamatuk went stolidly home, but the warmth of the fire drove him out again and he made for the boggy flats, calling and calling again. Once he fancied he heard an answer, but it was only Scraggles out there in the rain, shivering and lonely and lashing his gaunt flanks with his tail. Kamatuk went to him. It seemed little Yasika must be near. What friends they were—the wretched pony and the gladsome little maid. Again he called her name and again the pony answered with a plaintive whinny.

"You love her, kaviyo—find her!" cried the Indian, and with a sharp blow he drove the dumb creature from him.

Men and women and frightened children gathered about Kamatuk's tent and murmured their fears, but Kamatuk dismissed them and went in alone. Long after, a familiar sound smote his ears and rising hurriedly he parted the tent curtains.

"Again! Let me hear again."

It was distant whinny and he followed it, down through the drowning bottoms and into the willows, defying the angry snarl of the river as it lapped his very feet. He strained his eyes, for the dusk was settling, but surely it was he—the draggled pony pawing and plunging on the far bank

BULLS! BULLS! BULLS!

I Can place in California

100 Registered Shorthorns and 100 Registered Hereford Bulls

All of serviceable age for the coming year's use. Miller & Lux, Mayo Newhall and Vanderlynn Stow have had three cars of these bulls shipped to them to be used next spring. Any one in the market can inquire of any of the above mentioned gentlemen regarding their quality and individuality. They are well bred, carry a great amount of natural flesh and are large for their age. These bulls can be kept cheaper here than in the East, as corn is now selling 75 cents per bushel in Iowa. Buy now and save a large corn bill. Address

W. M. CARRUTHERS, 721 Hearst Building, San Francisco

of all that spray and foam. Yes, and clinging to his mane was the terrified girl, her long hair mingling coarse and black with his.

Kamatuk saw the sudden plunge and his heart sickened within him. He clamped his hands over his eyes. To have hastened out for this! His little flower maid with lips like the crushed berries! The mad current must bear her away and life go on for him in the hush of the wigwam. He flung up his arms with a hoarse cry and again the familiar whinny answered him. Yes, Scraggles was braving the river. Inch by inch he was mastering it. With nostrils dilated and the scrawny neck swollen into whipcords he was battling for his life and Yasika's. And Kamatuk, too, was battling. With the water swirling to his armpits he was making out to them, calling and cheering.

"Courage, Yaliva (child). On, on kaviyo!" and Scraggles came on.

A dozen hands were there to drag the half drowned pony from the river and pat him and stroke him and whisper strange endearments in his ears.

Kamatuk bore the wet girl homeward and dried her in warm blankets and fed her pinole (gruel) from the steaming olla (earthen vessel). Then together they went out.

That night Scraggles slept in sheltered shed and fed upon tender food. He will always be a runt and a shamble. But money could not buy Scraggles—Our Dumb Animals.

COST OF MEDICAL MILK.

Very early in the morning,
Hiram sought the spotted cow,
And with gloves his hands adorning,
Took the nightcap from her brow.

Roused her from her well-bred slumber,
Bathed her features with a sponge,
To the bathtub made her lumber
For her early morning plunge.

Manicured each horn and hooflet
Sprayed her o'er with listerine;
Scrubbed her stall from floor to rooflet,
'Till each inch of it was clean.

Then while her attention centered,
On her predigested bran,
Reverently Hiram entered,
With a silver plated can.

Into which, by gauze protected,
From bacilli and their ilk,
Hiram skillfully projected
Little streams of purest milk.

With a microscope he viewed it;
Slew a microb here and there.
Strained it, weighed it, cooled it, stewed it;
Pasteurized it, too, with care.

Then in bottles small he hauled it
To the city, and in short—
Everywhere that Hiram called, it
Cost them forty cents a quart.

BUR CLOVER COVER CROPS.

In northern California bur clover is probably the most desirable natural winter growth that there is to plow under in the spring for a cover crop to supply humus. It makes a heavy growth and gathers large amounts of nitrogen from the air to enrich the soil, as do vetch, peas and related plants.

Often bur clover can be obtained in the burs at slight expense from the cleaning of barley and other grains. One farmer in Acampo, San Joaquin county, recently bought a number of sacks of bur clover in the bur at 12½ cents a sack. This was the refuse from barley cleaning and excellent for seeding an orchard. The sacks could be resold at 5 cents each, making the net cost of the seed only 7½ cents; and it probably contained more than that value in plant food, aside from its value as seed.

It is usually unnecessary to seed land to bur clover more than once if plowing is done late enough in the spring, as enough seed will have formed then to start numerous new plants in the fall. Too early plowing will kill both seed and plants, and the partly matured plants will also not supply as much humus and nitrogen to the soil as will mature plants.

As a rule bur clover seems to like heavy soil. Where land is streaked one will often find bur clover growing well on the heavier soil and hardly at all on the sandy places. Vetch, on the other hand, seems to like light soil best, a point which should guide a person in the sowing of a cover crop. Both require a sufficiency of lime, which is true of all legumes.

THE QUESTION OF TO-DAY.

To Orchard and Farm: The working class of people of the United States are in one of the greatest trances ever known; they will work and slave for a mere sum just in order to keep themselves from starvation.

The poor people will keep staying with a so-called organization in order to get better wages, and many times will strike and kill many innocent people.

Now, if the working class could only see a few miles ahead of this terrible strife in the cities, they could probably make good in one of these strikes I am about to tell about.

Now, we all know that there is always a living on a farm, and you do not know where you are going to have a good living in the city.

Now, why don't all you people get together and get out of the gutter and go to the country, where you can be free and independent.

In the city you have to live out of a paper sack, and on the farm it is some different; you can raise most everything you want to consume anyway.

Now if you want to bust up the trusts, try one of these great unions and I am very sure this is the only way to bust up the trusts.

And still another thing—when you ask your employer for a day's recreation, what does he tell you? He will say: "Yes, but I will have another man here in your place tomorrow."

You are wholly dependent on your employer and on the farm you are dependent on Nature, and independent of the cursed wheels of the system.—P. A. STELLMACHER, Corvallis, Oregon.

MILK PAN RACK.

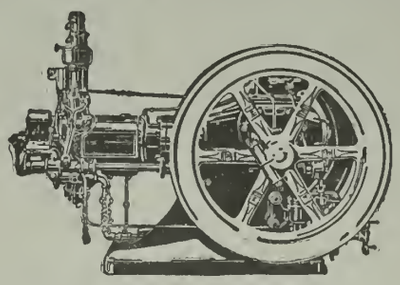
It is often inconvenient to find a suitable place in which to air and sun milkpans, strainers and buckets. We have a rack made of a few pieces of thin boards. A frame about an inch and a half wide extends along the sides. Thin boards are nailed to the under side of these pieces and to the top of a similar piece, which forms the middle of the rack. This makes two sloping sides on which to place the pans, held in position by a brace across each end. Fasten a wire at each corner, bringing them together above. This rack can be hung on the branch of a tree, as ours is, or on a bracket nailed to the outside of the kitchen wall. It has proved to be very handy and is never in the way. The milking utensils are always sweet.—MISS KARIN HAWKINS, Newcastle, Cal.

RENOVATING FURNITURE

I would like information by some one who has had experience in regard to renovating furniture. I have had some stored and it is covered with fly specks and dust. Please tell me how to clean it (I mean the wood part), and greatly oblige a subscriber, Modesto.

We telephoned M. Friedman & Co., one of the large furniture dealers of San Francisco, asking what should be done and were informed that the wood could be put in good condition simply by the use of some good furniture polish. Put on a very thin coating and rub vigorously until the surface is brought into as good condition as you desire. Repeat as often as is necessary.

International Harvester Engines Give You Cheapest Power



WISE farmers buy International Harvester engines—Mogul or Titan—engines of standard construction with such features as accurately fitted piston and rings, extra large valves, prompt repair service, use of cheapest local fuel—features that make them last by far the longest and save the most money in the end.

Be sure when you buy your engine that it is an I H C engine, and you will be sure of best material and best construction. They are made portable, stationary, or skidded; vertical or horizontal; air or water-cooled. Sizes range from 1 to 50-H. P. They operate on both low and high grade fuels.

Not every local dealer can show you International Harvester engines. Write us for interesting catalogues and full information, and we will tell you the name of the local dealer who handles our engines.

The I H C Line

GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Peg, Spring-Tooth, and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

International Harvester Company of America
(INCORPORATED)
Crawford, Neb. Denver, Col. Helena, Mont. Portland, Ore.
San Francisco, Cal. Spokane, Wash. Salt Lake City, Utah

California

AND PACIFIC COAST

Nature's Exposition

AND ALL-THE-YEAR VACATION GROUND

Yosemite National Park
Mariposa Big Tree Grove
Shasta Resorts
Del Monte and Monterey Bay Points
Paso Robles, Santa Barbara and Coast Country
Los Angeles and Its Beaches
Pasadena, Riverside, Redlands and San Bernardino
Byron, Paraiso and Gilroy Hot Springs
Santa Clara, Pajaro and Salinas Valleys
Lake County Resorts and Springs
Lake Tahoe Region
Klamath and Crater Lakes
Kings and Kern River Canyons
Santa Cruz Mountains and Big Trees
Sacramento and San Joaquin Valleys
San Francisco, Oakland, Berkeley and Bay Region
Portland, Tacoma and Seattle

For Fares, Train Service and Descriptive Booklets Ask Agents

Southern Pacific

THE EXPOSITION LINE—1915—FIRST IN SAFETY

Overland $1075

MODEL 80

f. o. b. Toledo, Ohio

IN spite of the fact that this latest Overland has a much more expensive, and entirely new and much larger full stream-line body, the finest electrical equipment, left-hand drive, demountable rims, and larger tires; *in spite of the fact* that it is made throughout of all first grade materials and first grade workmanship; *in spite of the fact* that it rides—due to its longer, improved and underslung rear springs—with the smoothness and ease of the highest priced cars—*the price has not been advanced.*

Such is the perfectly natural and economical result of manufacturing the greater volume of automobiles.

Our greatly increased 1915 production has permitted us to *again* add materially to the size, comfort, value, merit, quality and completeness of the Overland *without adding one dollar to the price.*

This is an achievement which no other automobile manufacturer is in a position to accomplish.

The newest Overland is, without question or doubt, the world's most extraordinary motor car value.

Buy an Overland and save money.

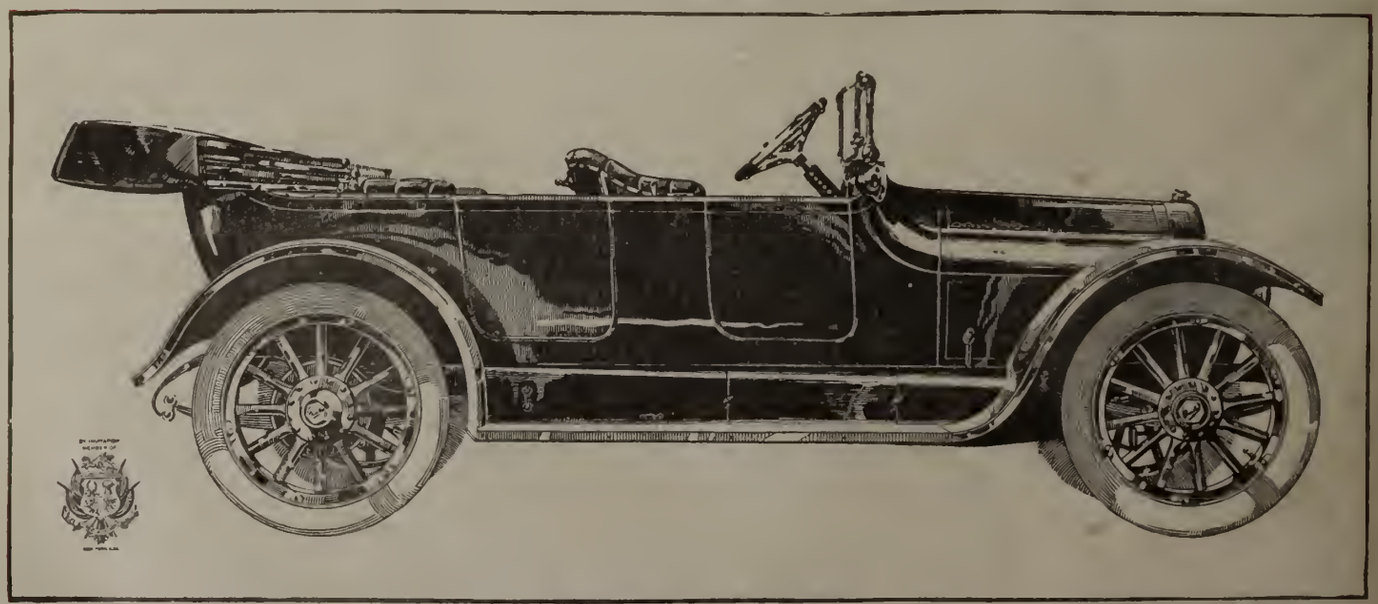
Dealers are now taking orders for immediate delivery.

Here are listed a few of the many additions, enlargements and new 1915 features

Motor: 35-h. p.
More economical
New full stream-line body
Tonneau; longer and wider
Greater comfort
Instrument board in cowl dash
Individual front seats, high backs
Upholstery; deeper and softer
Windshield; rain-vision
ventilating type, built-in
Crowned fenders
Electric starter—electric lights
Electric horn
All electric switches on steering column
High-tension magneto—no dry cells necessary
Thermo-syphon cooling—no pump needed
Five-bearing crankshaft
Rear-axle; floating type
Rear springs; extra long, and
underslung, ¾ elliptic
Easier riding
Wheel base; 114 inches
Larger tires; 34 inch x 4 inch
Demountable rims—one extra
Left-hand drive—center control
Body:—beautiful new Brewster green finish
Mohair top and boot
High-grade magnetic speedometer
Robe rail, foot rest and curtain box

Handsome 1915 *catalogue on request. Please address Dept.* 180.

The Willys-Overland Company, Toledo, Ohio



Model 81 *Prices:*
5 *Passenger Touring Car* - - $850
2 *Passenger Roadster* - - - $795

Two Passenger Roadster—$1050
Four Passenger Coupe—$1600
All prices f. o. b. Toledo, Ohio

Model 81 *Prices:*
Delivery Wagon with [illegible]*ed body* - $895
Delivery Wagon with open body - $850

CALIFORNIA STATE

ORCHARD and FARM

ESTABLISHED 1888

IRRIGATION

DECEMBER, 1914

California State Libr

About Increasing Orchard Profits

THE object of every business is to make money. If fruit growing is your business, you can only increase your profits by producing *more* and *better* Fruit, which means planting More and Better Trees.

Buying Cheap Trees is False Economy

When planting trees, *know* they are profit-makers. Don't be satisfied with *just* trees, or even *good* trees—plant our *prize winners*. They cost *no more* and *must be better*, otherwise they could not have won first prize in competition with California's best stock.

Gold Medal trees mean Gold Dollar profits for you—plant them this year and take the first step toward increasing your orchard profits.

The First Prize and Gold Medal was awarded our Fruit, Nut and Olive Trees and Grape Vines at the 1914 State Exposition.

A catalog of the best varieties of Fruit and Nut Trees and valuable Horticulture Data is yours for the asking.

Write Us First

THE SILVIA-BERGTHOLDT CO.
"Fruit Tree Specialists"
P. O. Box F NEWCASTLE, CAL.

Would $25 a Week Interest You?

Would you like to be free to do your own bidding, and earning $25.00 a week or more, as you choose? Your own boss?

We seek a representative for Orchard and Farm in your locality. We do not wish a canvasser. We seek the clear-eyed, energetic type of man or woman, the aggressive person, who will represent our publications with credit not only to themselves but to us. Acting as the representative of this Company you are assured a business training that will broaden and develop you, besides paying you handsomely. We allow a stated commission on every subscription, whether new or a renewal.

You can find no work that is more remunerative than acting as our representative all or part of your time. You will agree with us after you have learned of our plan. We will explain this when you assure us of your interest. It will not obligate you in any way.

Address ORCHARD AND FARM, HEARST BLDG., SAN FRANCISCO.

Answers for Farm Problems

WALNUTS, CACTUS, OLIVES—In setting out a walnut orchard, would it be best to plant black walnut trees and then graft or bud them over to commercial varieties, or plant the varieties from nurseries ready budded? Also give best varieties. Will spineless cactus do well on hilly land, or must it be planted on the level? Can olives be grown on rolling land without irrigation? The district I have in mind is the foothills of the Santa Clara Valley.—C. Y., Santa Clara, Cal.

By all means plant the budded varieties on black walnut root, rather than the black walnut itself, intending to work same over to commercial varieties. The delay, the irregular growth of the black walnut trees, the expense of working over, the misses, make planting in place more expensive, troublesome and unsatisfactory than buying grafted trees. It is true that there are a few persons in certain places where walnuts are grown without irrigation who believe in planting the black walnut and grafting it over, but we believe they are wrong and would by all means advice budded nuts. In the north the standard varieties are Franquette, Mayette and Eureka. The latter is particularly promising. There are also several other fairly satisfactory standard varieties for your location. There are also some large, fancy nuts, like Willson's Wonder, already grown in your locality.

If spineless cactus has fairly deep soil, plenty moisture and good cultivation, it should do well on hilly land. You could call on G. D. Cummings of Los Altos, near you, to see for yourself what the cactus will do. We have not seen his place and cannot say. You will see what he says on the subject in a different part of this paper. We are still in doubt as to the prospects for the cactus, but have seen it growing well with cultivation on the hills behind Livermore. You must remember, however, that the cactus will not grow without moisture, that rain in California falls only in winter, when the cactus is mostly dormant, and that just as is the case with trees, you have to have: First, sufficient soil to hold the moisture; then cultivation to retain that moisture for the plants. What you can expect then we cannot say and do not know.

Our advice regarding olives would be somewhat similar. The cactus is not a fool plant that will grow with little soil moisture, or cultivation, neither is the olive, and results in the right location will be proportionate to richness and depth of soil, abundance of moisture (within reason) and good care. It is true that the olive can live for years under very unpromising conditions, but it will not be profitable in such conditions. If you have a deep, rich hillside soil under similar conditions to those under which deciduous fruits thrive, you very possibly might make a success with olives, but our opinion is that the berries, or fruits, would be small in coast counties in comparison with what they are in the interior and could hardly advise olive planting in your situation. The most promising olive district now appears to be in irrigated lands in rather frost-free locations in the central California valley.

PRUNES FROM PEACHES—I am contemplating grafting a ten acre Muir peach orchard which is two years old, to French prunes. Please advise whether or not this is advisable and what danger, if any, I may expect from the attempt. Any further suggestions will be thankfully received.—J. H. C., Los Molinos, California.

Answer by John Vallance, Vallance Nursery, Oakland.

We would advise your inquirer to use the cleft graft. French prunes take kindly to all methods of grafting and unite with the stock very nicely. Cleft grafting is done as follows: Cut off the top smoothly, then split from the top and insert your graft, which is cut wedge shaped. See that the barks of tree and graft touch on one side. Cover with grafting wax. Two grafts should be inserted in each top, and if too many, they can later be removed. The time for grafting is during March, but the cions must be cut in January and heeled in sand till ready to graft, as the wood must be in a dormant condition when grafting.

THE BATTLE OF THE BUG.

Ten million Russian soldiers knelt unseen
Behind their whiskers, like a bushy screen—
A stratagem of General Slvkilug
To trap the Austrians on the River Bug.

Ten million Austrian soldiers marching there
Were amazed to find the River Bug grew hair.
"My weary soldiers, rest," the general said,
"And each man take enough to make a bed."

"How prodigal," he thought, "is nature—still
Outdoing man in everything, save ill!
I will return in peace when war is o'er
And build a mattress factory on this shore."

They stacked their arms and unsuspecting went,
Each man to get an armful for his tent.
You know the rest—those vocal whiskers woke—
A blazing furnace—shrapnel shell and smoke.

Confused, the Austrians fled to Slav and Liz,
And some good runners hurdled into Biz.
Thus, by the strategy of Slvskilug.
Was won the famous battle of the Bug.

—St. Louis Post-Dispatch.

A Telephone Pays—Every Hour

It pays in MONEY. It pays in PLEASURE. It pays in TIME SAVED. Put in a telephone, and you can talk to your friends' homes in the evening for a social chat, or get the doctor *quick*, or call for help. You will never feel lonely or "away off" if you have a telephone. In the daytime you can call up the town and find out latest prices for crops, order supplies, ask the railroad about shipments, or talk over matters with neighbors. Why be isolated, cut off from everybody, when a

Western Electric Rural Telephone

will put you "next door" to everybody, and save long drives through cold and wet. A FEW DOLLARS buys all this convenience. A FEW MINUTES' TIME taken to write us on how to secure good telephone service will put you in possession of full information. Write nearest house below and mention this paper.

WESTERN ELECTRIC COMPANY
Manufacturers of the 8,000,000 "Bell" Telephones
PACIFIC HOUSES:
San Francisco Oakland Los Angeles Seattle Portland Salt Lake City
EQUIPMENT FOR EVERY ELECTRICAL NEED

ORCHARD AND FARM
IRRIGATION

Vol. XXVI DECEMBER, 1914 No. 12

Transforming the San Joaquin by Irrigation

By Dallas E. Wood, Merced Irrigation District Campaign

The agricultural history of California, particularly of the San Joaquin valley, may be divided into three periods: the pasture age, the grain-ranch age and the small farm or irrigation age.

Of these three eras the second, or grain-ranch age, is doubtless the best known, co-existent and inseparably identified as it has been with the life and development of the country for the past half century. It has been the age of few land-owners and big holdings when the typical farmer counted his acres in four figures, and, in a limited sense, "owned the earth." The land was his, the crops that rose yearly on its surface were his, the money they brought was his. Thus the grain rancher in his age was the monarch of the plains and the landless man had no course open but to be the workman or tenant of the "big fellow."

The writers and historians of the West have immortalized the grain-ranch age and glorified it into a romance of enduring interest in which the land barons, the vast, unending stretches of grain or stubble, and the multi-mule-team harvester all are featured as symbolic of the period.

But time works changes. To the soil the persistent bringing forth of grain is an exhausting process that cannot be continued with profit for many decades. The grain yields of to-day and to-morrow can never be the bonanza quantities that they were ten, twenty and thirty years ago. And, with the disappearance of the fortunes that were found in grain cultivation in the earlier days, the glitter of the romance of the old Western ranch life has become extinguished.

Another change has become necessary. New kinds of crops must be planted and rotated. New methods must be employed. The artificial application of water to the soil must supplant the former dependence upon rainfall. Hence, the transition, now in its most active stage of progress, from the grain-ranch age to the small farm or irrigation age. It is a transition fraught with great hope and promise for the country, heralding, as it does, a period of a wider distribution of land ownership, a more dense rural settlement, and an agriculture ever green and picturesque with continuous crops of different kinds rather than of annual crops of one monotonous variety. It is to be a period of comfort and independence heretofore unequaled for all who care to answer the call to the soil.

To establish an adequate and efficient irrigation system for a farming community is to open for it the flood gates of prosperity. It increases manifold the productiveness of the soil, gives immediate impetus to immigration, encourages the local investment of capital and enhances the value of realty while creating a market for its sale. At the same time irrigation lessens the uncertainty that has always attended the agriculture dependent upon rainfall and thereby puts farming on a basis where the season's results can be foretold with the same degree of accuracy as is possible in other lines of business.

Gradually, steadily, inevitably, the various sections of the great farming valleys of the West are one by one joining the march of agricultural progress by cutting up the great old grain estates into few-acre farms and developing the water resources at their command.

Subdivision and irrigation projects are necessarily companion enterprises.

Part of the Crocker-Huffman Canal in the Merced County Foothills.

Each needs the other if lasting success is to be obtained. The small farmer must look to the intensive method of cultivation for his prosperity, and this is possible only when a dependable year-around irrigation supply is at hand. The thousand-acre farmer cannot afford to pay the costs of irrigation development if he is to continue the lazy practices of dry farming. On the other hand, he finds the intensive cultivation of so large an area a task too tremendous for personal management. Therefore, to get his ample share of the benefits of irrigation, the big land owner must subdivide, sell off in small parcels, and thus, through the medium of colonization, aided by the discriminate use of irrigation, develop to the maximum the wealth that lies potential beneath the soil.

It is the extensive use of irrigation, made possible by water conservation, that has stood behind the growth and advancement of the towns of Southern California. Fresno's rise to a position of populous and industrial importance has been brought about by successful irrigation. Similarly the irrigation districts of Modesto and Turlock are alone responsible for the great influx of settlers and increase of wealth which those communities have enjoyed while the development of unwatered localities has been at a comparative standstill. Other examples could be enumerated at length. You can well imagine the abundance of evidence of this kind that can be pointed out when you consider that the figures furnished by the United States census of 1910 show that in the year previous to their compilation fully 44.6 per cent of all California's farms were under irrigation and that irrigation is practiced in varying percentages in 57 out of 58 counties in the State. Since then sufficiently more land has been brought under irrigation to raise those percentages considerably.

In Merced county at the present time there is a vigorous movement afoot, instituted by the water-users, to establish an irrigation district under the irrigation act of 1897, in order to extend and improve the agricultural possibilities of that locality.

Unlike a commercial enterprise, an irrigation district is a public corporation that operates under State laws providing for its organization and management and empowering it to issue bonds and levy and collect taxes with the object of obtaining funds for the purchase or construction, and for the maintenance, of irrigation works and for carrying on a drainage service for land within its territory standing in need thereof.

Public ownership, State protection and local control, are the basic principles on which the irrigation district system is founded and conducted. Under this plan, too, water belongs to the land irrigated rather than remaining an appropriated commodity to be sold for the private profit of an individual or company.

That portion of Merced county which seeks the organization of the irrigation district is the part known locally as the "East Side," lying east of the San Joaquin river. The area from which the territory of the district will be selected comprises aproximately 275,000 acres, all of which is good, fertile soil susceptible of irrigation from a common source and typical of the whole San Joaquin valley has a surface shaped by nature for the easy spreading of water. This acreage represents 1.9 per cent of all the valley agricultural land in California and 2.5 per cent of the total that lies in the great valley drained by the Sacramento and San Joaquin rivers and their tributaries.

Of this 275,000-acre stretch of land, approximately 50,000 acres are now under the irrigation service of the Crocker-Hoffman Land and Water Company, whose irrigation works, including 400 miles of canals, will, according to present plans, be taken over by the proposed district and included in its enlarged system.

As far as the further detailed plans of the proposed district have been made, resorvoirs will be built to equalize between the flood and dry seasons by holding the Merced river's excess waters of flood periods for irrigation use in the dry months. Thus waste will be converted into wealth and a great additional body of excellent farm land will be reclaimed from agricultural indolence to a state of intensive productiveness.

Records of the discharge of the Merced river for a period of twenty years show that, with the conservation of the flood waters, the river will be counted upon to adequately irrigate a district of approximately 275,000 acres, with a guarantee of 100 per cent water supply through all seasons—even in dry years.

In the matter of water storage possibilities the proposed Merced district is particularly favored. A number of reservoir sites that are well located and adapted for the district's use insure a surplus of economical storage. The largest of these is the Dry creek site, which is 12,000 acres in extent, having a possible storage capacity of 350,000 acre-feet. A realization of the magnitude of this capacity can be conveyed best by comparison. According to the United States census for 1910, the total combined capacity of all reservoirs in the State of California was 743,269 acre-feet, and there were 1,583 of these reservoirs. The proposed Dry creek reservoir will have more than half the capacity of the total in the State at that time.

The certainty of a year-around superabundance of available water; economical means of conservation and conveyance; a large territory of good soil favorably shaped and located; a marvelous climate, and the judicious application of human energy and perseverance; these are the assets that assure the success and future of the Merced irrigation district and will have an incalculable effect on raising the average of wealth in the country—both per capita and per acre.

Already in those localities where extensive irrigation has been inaugurated and proven its worth, this transformation shows its color. Fields of healthy alfalfa are feeding to fatness great numbers of marketable livestock of all kinds. Trim, wellkept orchards repay their care annually with boughs heavily laden with luscious fruits. Attractive, neighboring houses, that rival urban homes, each with its lawn or flowering garden in the foreground and good-looking, up-todate barn in the rear, replace the desolate and shadeless abodes of the olden days. And country roads are fast becoming highways busy with motor traffic between farm and farm as well as between farm and town.

The University of California has issued a new bulletin on "Vine Pruning in California," by Frederic T. Bioletti, which gives the principles and practices of the pruning of grape vines in great detail and with great clearness. The bulletin is filled from beginning to end with illustrations, making clear every important point told of and it should be invaluable for those who plant vineyards or grow grapes. The bulletin describes the method of pruning vines from the time of making cuttings until vine is in full bearing.

Love never looks for something it doesn't want to find. Jealousy does.

Milk Record For 'Orchard and Farm' Readers

To ORCHARD AND FARM—There are many matters of great importance to the dairyman that can not be too often called to their attention. I note in ORCHARD AND FARM for November the following that surely will stand repetiton:

"Value of a Pure Bred Sire," by W. M. Carruthers.

"The scrub bull is the most expensive and extravagant piece of cattle flesh on the farm. He does not stop at being merely worthless, but will lose the farmer the price of two or three good bulls every year he is kept. The dairyman cannot afford to keep a scrub bull if the animal is given to him, if he is paid for boarding the beast and given a premium of $100 per year for using him. The presence of the scrub in so many California herds—many times without a single qualification except that he is a male—is an offense and disgrace to the dairy business and a plain advertisement of the dairyman's bid for failure. The only thing on earth the scrub sire is good for is sausage, and it is high time that this plain and simple truth were given practical acceptance on every dairy farm.

"By all means get a good dairy sire if you have to sell two or three cows to do it. The improved sire is, without question, the most economical investment in any dairy herd."

There is another matter that is deserving of equal attention and that is the improvement of the dam. I hope you will be able to convince your many readers that what is also needed is what I call "Business Methods on the Dairy Farm."

Old time methods must be discarded. The increased value of land and cattle, the cost of improved buildings and equipment needed to produce the best results, have made this necessary. A dairyman, to be succesful, must combine business principles with his knowledge of breeding and farming.

The most important is the weeding out of the non-producing, non-paying animals. Persistency and quantity of the milk flow are two prime factors in the selection of a dairy cow. The Department of Agriculture and every periodical devoted to dairying, has repeatedly stated that "The profits yielded by a good cow often go to offset the losses caused by poor cows in the same stable." Experimental tests have been going on for some years, with the same result, the good cows are carrying the loss occasioned by the poor ones. But how can the poor ones be eliminated? That is easy of solution. Make a record; weigh the milk. A scale, which is made for the purpose, should hang in every barn, the milk should be weighed (separately, from each cow) night and morning and the result entered on a sheet called a "milk record."

A cow that does not give 4,000 pounds of milk a year would better be sold to the butcher, as 7,000-pound cows are easy to get and the expense is very little more than to keep the 4,000-pound cow. Dairymen are finding it to their advantage to raise their heifer calves. A milk record would show what calves to raise. The best only should be kept. If this is done the record would show, in a few generations, an increase to 9,000 pounds and even more per cow per annum.

In a recent demonstration in Indiana two cows were shown, one that gave 17,000 pounds of milk per annum and the other 2,672 pounds. The first cow showed a profit of $210.80 and the latter a profit of $13.31 over the cost of the feed. When we consider the cost of care, the latter cow was kept at a loss.

Experiments are being made for the farmer's benefit every day; experiments in feeding, care of animals and other subjects too numerous to mention. The results appear only in the farm journals. A few dollars put into subscribing for some of these periodicals would possibly save hundreds. Better farming, better buildings, better care, better livestock, better business methods, etc., are what make us really appreciate our farms. We come to a realization of the fact that life on the farm is the most independent, the healthiest, the most important and self-satisfying of any other on this green earth.

E. B. McFARLAND.
Steybrae Farm, San Mateo.

This sheet is to be used as a weekly record when every milking is weighed. It may be used as a monthly record if only occasional milkings are weighed.

Herd of . . . . . From . . . . . 19 . . . , To . . . . . 19 . . . .

COW NAME AND NUMBER		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		REMARKS
DATE		lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	lbs	oz	
	A.M.																																	
	P.M.																																	
	A.M																																	
	P.M																																	
	A.M																																	
	P.M																																	
	A.M																																	
	P.M																																	
	A.M.																																	
	P.M																																	
	A.M.																																	
	P.M																																	
	A.M																																	
	P.M.																																	
TOTAL																																		

PAICINES SHORTHORNS.

Just recently the Elmendorf herd of Shorthorn cattle owned by the late J. B. Haggin, Lexington, Ky., was sold to Kingsley Macomber of Paicines, Cal. Several years ago Doctor Macomber purchased the entire herd of the Harkness Kentucky Shorthorns. He has been handling them on his ranch in California for several years and with this new collection his Shorthorn establishment ought to be one of the best in the State. The Elmendorf people purchased "Whitehall Marshall" to head their herd the year he was made grand champion of the breed at the international in Chicago. This young bull had a great show yard record and has been at the head of their herd for the last four or five years. The year after purchasing Whitehall Marshall they selected King Cumberland, that year junior champion of the international, to assist Whitehall Marshall in the herd. King Cumberland was bred by C. A. Saunders of Manila, Ia., and any one who has followed the Eastern show rings for the past ten years will know that Charlie Saunders has bred many a good one. He bred the grand champion bull at the Iowa State Fair this year.

The female end of the Elmendorf herd is made up of a lot of grand cows, and it is to be hoped that they will be handled at the new home with as much care and thought toward the advancement of the Shorthorn breed as they have been handled in Kentucky. A great herd of Shorthorns will not prove a success unless a successful man handles them; what has been Kentucky's loss is California's gain. If California keeps on purchasing herds of Shorthorns such as the Elmendorf and the White & Smith herds she will soon be in the ranks of one of the best Shorthorn States in the union. With our wonderful feeds, environment and climatic conditions, California should some day become the Shorthorn stud State of America. It would have been this ere now if the California breeders had taken the initiative and handled their herds in the same conservative way that many of our Eastern men have.

W. M. C.

THE PORTLAND SHOW.

On account of the presence of the foot and mouth disease in this country and the activity of the Federal Government and State Governments of those States in which the disease occurs, it has been decided to call off that part of the Pacific International Livestock Exposition at the Portland Stockyards given over to breeding classes of cattle, sheep and hogs and to have strictly a fat stock show, covering animals intended only for slaughter. While the danger of disease from holding a show such as is usually given is extremely small, it was felt wise to keep the movement of stock down to an absolute minimum until the Government had eradicated the disease in this country

---

Although quite a bit of stock is lost every year through eating poisonous plants, many stockmen have been unable to identify several of these poisonous plants by written descriptions. As a result the U. S. Department of Agriculture has just issued a circular describing six of the most poisonous plants and accompanying the descriptions with illustrations through which stockmen will be able to identify these plants and so protect their cattle. The plants shown are the zygadenus, or death camas; the lupine; the rattleweed or white loco; the tall larkspur; the low larkspur and the cicuta, or water hemlock. The circular can be had by application to Washington.

Lessons in Citrus Culture

By Prof. Elmore Chase.

Article II.

Before taking up a discussion of the way to prepare the soil selected for planting, the attention is called to a fact of immense importance which relates to the water required for the production of fruit. In all the discussion that follows, the reader is asked to keep in mind the peculiarities of the orange tree as noted in the previous article. J. A. Widstoe of the Utah station, and many other investigators in the same line, have found **"that the amount of water actually required for the production of a pound of dry matter becomes smaller as the available fertility of the soil increases."** The richer the soil, the less water required to produce a crop.

Mr. Widstoe states that "this law is not new, but it does not seem to have been applied to cultural methods where the limiting factor is the water supply. These investigators have demonstrated that thorough cultivation throughout the season increases materially the yield of dry matter and decreases the amount of water required per pound of dry matter produced. This is a very important principle when applied to districts where the rainfall furnishes the supply of moisture for plant food. The fact is of equal importance to irrigation farming, especially in districts where the water supply is limited.

Note that the importance of this fact lies in making available the plant food in the soil, hence in the preparation for planting trees, the aim must be ever in mind to make such a preparation of the soil that will enable the cultivator to make available the largest amount of plant food in the soil. Besides the supply of moisture to the tree, the soil must contain an abundance of air; for both are equally necessary in making the fertility of the soil available. Without air and moisture the food producing agents of the soil avail but little.

These investigations have demonstrated fully that the cultivation of the soil, thoroughly, frequently, and during the entire season was the most effective means of making plant food available, thus diminishing the supply of water actually needed by the plant. It was found that this cultivation required a third less water to mature a pound of dry matter than when the soil was cultivated but little. It goes without saying that the grower must keep his land rich in plant food. The conclusion is that in preparing the soil for the growth of trees, we must keep in mind that that preparation is the best which will retain the largest amount of water, air and other plant foods either naturally in the soil or by the application of fertilizer.

Preparation for Planting.

In the selection of soils nothing has been said about the depth of the soil above the subsoil. Ordinarily for the successful growth of any tree, especially the orange tree, there should not be less than two feet in depth of good soil above the inert subsoils, but often in these foothill regions, we may find these subsoils of such a nature that the trees will grow equally well in soil only a foot in depth, so that this limitation as to depth is not given. In using the term subsoil, as applied to California lands, it has a limited meaning. As used here it refers more to position and inertness, than to infertility.

Strictly speaking, we have no genuine subsoils. A subsoil has no plant food and when by very deep plowing it is brought to the surface, plants do not thrive. California soils are fertile to a greater or less degree several feet from the surface. If they do not supply an abundance of plant food, it is because of inertness, hence the principal aim in the preparation of such soils is to bring them into activity. This is most economically and most efficiently done by the use of dynamite. The process of dynamiting soil requires skillful work based on a good knowledge of soil conditions. The whole process proceeds on the line of moving the largest area of soil possible, not less than four or five feet deep and a circle from eight to twelve feet in diameter. This is to be done, not by shooting a mass of earth into the air, but by lifting the mass up above the level of the surface. This result is secured by means of a soil auger or drill, making a hole at a given depth, that depth depending on the character of the soil varying from three to six or even more feet, and charging this hole with a low per cent of dynamite, using half a pound up to two or more pounds. The general rule is to make the hole four feet deep and use two sticks of 25 per cent Red Cross dynamite. One stick is used at three feet, two sticks at four and for every additional foot, one stick should be added. Experience in dynamiting will guide the operator in producing the desired result.

When to Dynamite.

The best time for doing this work is at the season of the year when there is the least moisture in the soil. That time is in the autumn before the rainy season has moistened the soil to any considerable depth. Another advantage by dynamiting in the fall, these tree holes are aerated during the winter and filled with moisture from the winter rains and at the same time the loosened soil has settled ready for tree planting. No hole has been thoroughly blasted which does not permit drainage. This fact must be determined before the tree is planted. Sometimes we find small areas where the soil is so obdurate that a drainage is not easily secured. In such cases it is often better to plant a tree that requires less root room than the orange, but by blasting at a very great depth and later, dynamiting between the trees, the orange tree will make thrifty growth and produce abundantly.

Sometimes after blasting through the obdurate soil, a loose gravelly soil is found just beneath. This gives a very poor foundation on which to grow a tree, for soil water on reaching this soil, is forever lost; but generally in such cases a smaller charge at a less depth will produce a condition which will retain the moisture for the use of the tree. If the blasting has to be done in the spring, a large amount of the soil should be removed after blasting and pot holes be filled with good soil and the hole filled up to the proper height for the tree when planted. Sometimes it may be found necessary to firm the new soil by filling the hole with water sometime before the tree is placed. All deep plowing should follow the dynamiting before any tree is planted. If money can be spared, a six-inch depth furrow should be made with a heavy soil plow and this followed by the subsoil plow. If plowed in the dry season, it will require not less than twelve heavy horses to pull the plow at least 12 to 16 inches deeper than the soil plow, thus stirring the soil from 18 to 24 inches deep.

Alfalfa First.

After giving such a preparation of the soil, if alfalfa were grown from three to five years and the last crop plowed in, and the whole planted to an orange grove, there is no doubt that at the end of ten years these trees would be larger and producing more fruit than the trees which were planted in the same soil with the same preparation except the growing of the alfalfa. During the five years a good paying crop could be taken from the soil, but the conditions are not always favorable for the growth of the alfalfa. We now have the soil stirred up over the entire field 24 inches deep and the holes for the trees four or more feet in depth with a diameter of not less than ten feet. This amount of active soil furnishes a large amount of native plant food. This plant food is sufficient to bring any fruit tree up to the time of producing fruit, but as most of our soil is deficient in organic matter, this can easily be supplied while the tree is growing towards fruiting from any source most convenient.

Some important points are passed over for the present to be taken up in the discussion of problems which the new settler must encounter. The burden of the story is to convince the reader of the great value of California soils, which are not to be looked down upon as a clod which the rude swain turns with his plow and treads upon. Our soils are the richest assets the State has. They are teeming with life and working out results and controling forces which send up into the air the towering pine, tints the delicate flower that grows at our feet, and perfumes the air with the fragrant orange blossom and creates "that subtile and delicate citrus quality that must be associated in all the qualities of an orange." That can only be described by saying that it appeals to the intellectual perceptions, as that natural goodness and excellence inherent in the choicest products of Nature.

A just estimate of California soils is the first requisite for establishing a home in California climate. No home should be selected without first having a knowledge of the soil and soil conditions. No tree should be planted whose life history is not at least partially understood, and certainly no one should attempt to grow oranges without a good knowledge of the habits of the tree, as set forth in the first paper, and its adaptability to the peculiar soil conditions.

Good breaking plows are absolutely necessary for progressive farming. No one can expect to do good work with a poor breaking plow. Whether you use a tractor, a sulky or a walking turn plow you should have an implement that "takes" and "turns" the land to the required depth and one that is economical of horsepower and man labor. Be not deceived; the farm cannot be fooled; it must be tilled in a satisfactory way if you expect profit.

Don't cut the mane of a work horse. The long hairs are a protection to the top of the neck.

Plant Pears for profit. California Bartlett ripen earlier than Eastern and Northwestern grown pears. During their season they monopolize the markets of the United States and Canada.

Silva-Bergtholdt's

FOOT-HILL GROWN PEAR TREES

have strong, hardy root systems; the foundation of all successful trees.

We have a fine block of Bartlett, Comice, Winter Nelis, Anjou and other varieties. Our buds are cut from selected parent trees.

THE SILVA-BERGTHOLDT CO.
"Fruit Tree Specialists"
P. O. Box F Newcastle, Cal.

NOVAGEM

TOWER OF JEWELS

Novagems are one of the innovations of the century. They are scientifically designed hand-cut spectro gems and can only be detected from the diamond, ruby, sapphire, emerald and amethyst by careful tests.

"Novagems" will be used for the first time as one of the remarkable lighting features of the Panama-Pacific International Exposition. 125,000, weighing approximately ten tons, will flash their scintillating colors, ranging from the palest violet to the deepest red, from the tower of Jewels, which rises 435 feet. They will also be used on the heads of the seraphic figures surrounding the Court of the Sun and Stars.

"Novagems" vary in size from 21 to 47 millimeters in diameter. All of these sizes will be sold as official souvenirs and they will also be reproduced in miniature, ranging from ½ karat to 3 karat mounted in rings, hat pins, scarf pins, watch fobs, brooches, lapel buttons, tango rings, and other novelties.

"Novagems" are covered by patents and fully protected and cannot be obtained except as official souvenirs of the Exposition. In addition to being put up in boxes containing the official seal the rings which are rolled gold, drawn from a single bar, without seams, are all stamped on the inside "P. P. I. E.—1915—Official."

Here are Four Charming Souvenir Christmas Gifts

Poppy Hat Pin, with Novagem Jewel in either ruby, white or canary. A perfect reproduction in natural color of the State flower of California. Length of pin 6 inches 75c

Poppy Brooch Pin, a triple souvenir, including Exposition seal, Novagem Jewel in ruby or white and California poppies, in dull gold effect. Remarkably rich and attractive 75c

Novagem Tango Ring. 17 jewels; a distinctive novelty. Combinations: amethyst and white, emerald and white, blue sapphire and white; $2.50. With single jewel in ruby or white..$2.00

Exposition Seal Button, in dull gold effect, with ruby or white Novagem jewel. An exact reproduction of the official seal. A handsome decoration for lapel or waist 50c

Sent prepaid on receipt of price.

NOVAGEM JEWEL CO.
1044 Phelan Building,
San Francisco, California,

A Revolution in Orange Pruning

Four years ago in the Porterville district of Tulare county probably one orange grower in twenty made some effort to prune his trees more than by the usual cleaning out of dead wood, taking the branches a bit off the ground, and pulling off some of the more vigorous suckers. The situation as far as the trees themselves were concerned was practically the same as it now is in nearly all citrus sections. The facts of the matter were that nobody knew how to prune an orange tree and so they did without pruning, and applied their efforts to giving the trees what was needed in irrigation, cultivation and fertilization.

There has been a change. At present the proportion is about eight who prune to two who do not. Of the eight about five follow with more or less care the principles described here in recent issues as practiced by A. A. Jenkins of Porterville and the others are quite well convinced that pruning is beneficial, but go about it in hit or miss fashion. Clearly these conditions have developed from example. Orange growers saw results, so they got to work. Clearly if this is the case in one district it will before long be the case all over California, for when results begin to show definitely it is only a question of time before people begin to follow the practice that proves best.

The proposition of orange pruning can be gotten at from two different angles. The first is where a tree is brought up in the way it should go. The second is where a tree has been grown along the old rule of letting it look after itself, and develop any bad habits it wanted. Owing to the fact that the orange tree as it is commonly grown develops along about the right lines, it is possible to take hold of almost any orange grove that is well cared for, although the trees may seem to have outlived a bearing age and by proper pruning obtain exactly the same results as with a young grove that has been pruned right at the start. This can be seen in many instances around Porterville.

A Model Orange Grove.

The kind of pruning which is being done to a greater or less extent around Porterville can be roughly described as resulting in thining out the wall of the orange tree by the removal of those branches which have mostly finished bearing and need to give place to newer and stronger wood, thereby letting in light and air and giving a chance for healthy fruit wood to grow throughout the inside of the tree. The result of this is that fruit can grow both on the outside and inside of the tree, and in practice on a well pruned tree the amount of fruit inside is most likely to be greater than that of the outside. This is in spite of the fact that the tradition has been that northern orange trees would produce fruit only on the outside.

There is one 35 acre grove eight years old in the Plano district near Porterville which has been brought up pretty near right from the start and is a model in its way. It was purchased by S. G. Winch of San Jose three years ago for $50,000, of which $25,000 was paid down. The debt was reduced very greatly the first two years and unless prices are ruinous this year, the whole $25,000 and interest will have been paid by the earnings of the grove above expenses. It was the pleasure of the writer to go through this grove carefully with Mr. Jenkins and two experienced citrus men of Southern California, who stated that in their opinion the grove was pruned in just the right way. The ordinary tree in most of California is not pruned at all, so this pruning evidently did the business.

The striking fact about this grove, outside perhaps of the fact that the trees were producing very uniformly in proportion to size, was the comparatively small amount of fruit to be seen at first glance. At a glance the trees appeared to have considerably less than the average amount of fruit for this district, but on pushing the branches to one side the interior of the trees could be seen to be loaded with fruit, all as far along in ripeness as that on the outside.

Interior Fruit.

There is little interior fruit on the usual type of orange tree on account of the thickness of the wall of leaves. Where light cannot enter all growth is thin and weak, so the blossoms are sickly and weak also and fall off. The reason that fruiting is heavy in the interior of a well pruned tree evidently is that the bloom is plentiful and strong on account of the entrance of sufficient light and air and, not being exposed to the strong sunshine or the winds that come, the fruit sets better than that on the outside. Whatever the reason, the fruiting seems heavier on the inside of well pruned orange trees than on the outside.

A second point is quality. It probably has been noticed that fruit produced near the ground is normally of finer texture and quality than that farther up. The reason probably is the protection given from direct light by the leaves and branches. Without exception the fruit on the Winch trees just before picking started far surpassed in quality and texture the average fruit of the district, which itself is normally very good and better than usual this season.

Perfect Fruit.

At the National Orange Show fruit from different districts is displayed in competition. It is selected from here, there and everywhere in a district. For proper competition it should come from individual trees or groves. It is to be hoped and expected that several boxes from single trees of this grove will be shown at the next orange show and from the appearance of the fruit as it was turning color it should create a sensation and cause an immense stimulation to better tree care.

Last year we went on a hunt in the markets and elsewhere for oranges which would have a thin, smooth skin of fine texture and found them scarcer than hen's teeth. The ideal orange seems to be almost non-existant, or the average grove at least. Usually the navel has some wrinkles on the stem end. Hardly a navel on this grove had a skin thick enough to wrinkle if it should try to do so. The skins averaged only about half as thick as that of other oranges of the same stage of ripeness. The accuracy of these statements can quite probably be determined at the Orange Show.

We took one orange of a size to pack about 96 to the box, according to Mr. Jenkins' estimate, and found it weighed a hair more than a pound. All the oranges on the trees were very heavy and would pack say 15 pounds heavier than average to the box. Quality like that counts for prices. Last year Mr. Winch averaged $1.26 per box, or far and away above the district average.

Such quality is largely due to heavy yield, as puffy oranges are developed from thin setting of fruit and a rule is that a heavy producing tree produces fruit of fine quality provided it has the strength to finish the work of fruit making properly. Then the shelter from direct sunlight by the leaves doubtless was largely responsible for quality, just as fruit produced near the ground is of fine quality. Anyhow, there are the facts as to quality, whatever their cause.

The trees are on a granite soil on a southern slope. They are given the best kind of irrigation, are cultivated properly and have what it needed to make them do well. Incidentally it can be stated that there is a due proportion of runts in the orchard, now brought into good growth and bearing, that gum disease has tried to start more than its share of trouble and the grove is not good solely on account of ideal conditions, but because it has been handled aright.

The Former Borders.

The runts, or dwarfed trees, which formerly would grow little and bear less, are bearing well and growing just as well and it is all due to the right application of pruning principles. The reason for being runts is that they had more than normal natural vigor at the start.

To explain: A young orange tree starts to grow faster than its neighbors, so naturally it sends out more shoots. These shoots make a thicker shade. The branches crowd one another and will not give one another a start. The result is that the very vigor that should make a big tree makes a dwarf tree, a runt, a pensioner, a border, or whatever you call it. There were a bunch of these trees in the orchard. The surplus branches were thinned out, the trees stimulated by the pruning, the remaining branches given more room and freedom, and the trees started up strong in both growth and production, just as old trees have done renewed by proper pruning.

Then there were a couple of rows in part of the grove that was developed gum disease. The soil is rather heavy, irrigation was done too close to the trunks and puddled and packed the soil around the crown of the tree and gummosis developed. The soil was removed around the crown to overcome this congested condition, diseased bark cut away clean, the cut surface treated with a preservative and disinfectant, and sand put around the crown to prevent any future pack-

(Continued on Page 10).

Authority on Farm Machinery

A recent bulletin of the American Society of Agricultural Engineers emphasizes the need for expert knowledge regarding farm machinery and the great advantages that would result from having some government board or other organization pass on the merits of the different kinds and makes of farm machinery and equipment. It is suggested that the society undertake this work, the value of which would be inestimable to the American farmer and great to the manufacturer also.

L. W. Ellis of the Holt Manufacturing Company, Stockton, is chairman of the society's publicity committee and has much to do with the development of plans for this end. Orchard and Farm has discussed the subject thoroughly with him and obtained his views.

Mr. Ellis' ideas on this subject have been developing since he entered the United States Office of Farm Management under Dr. Spillman, who is the father of the farm management idea at Washington. While Dr. Spillman was at the Washington Agricultural Experiment Station at Pullman he found that he was able to make rapid progress and save much experimental work by asking questions of successful farmers. After he went into the Government service he agitated doing more of this kind of work until finally he was given charge of the organization of the new Office of Farm Management. The work of this office has grown and been very successful, but there was one big question that even the best farmers could not answer.

The Cost of a Farm.

That question was, "How much will it cost to equip a farm of given size in a given locality for a given type of farming, taking in the cost of land, buildings, fences, drainage, water supply, live stock and machinery?"

It was a big question, and they gave Mr. Ellis the job of finding the answer. He was able after two years' hard work to develop a system for getting the information, the actual collection being undertaken by his successor, H. H. Mowry, who has made good progress.

There was a big demand for such information, and it was highly important, as every one who is going back to the land or moving from one location to another to start a new type of farming finds it absolutely essential to know what the expenses will be in getting a start. The farmer building up a place wants to know just what equipment he needs, and then where to buy it. Every mother's son who was asked in the work of the Office of Farm Management what percentage of his capital he ought to invest in each class of equipment came back to know just where to buy it, and there the Department had to dodge the issue.

Advice Not Given.

There is a lot of good information on file with the United States Department of Agriculture regarding the different types and makes of farm machinery, gathered from field investigations, the county experts, cooperators, etc., which might warrant the Department in recommending what is good, even if policy should keep it from condemning what is bad. But there seems to be a fear that trouble will arise if the Department of Agriculture ever seems to be recommending or condemning something, and so giving offense to some manufacturer.

The States are not doing any better. Uncle Sam seems to be missing an opportunity.

Since the Department of Agriculture and the different States are [illegible] this subject alone, the problem before us is to find some organization that is absolutely competent to assure the American farmer that this or that machine is safe for him to buy. We have a sterling mark for silver, a pure food law, a national board of censorship for the movies, but we have nothing to guide the farmer in buying machinery except the claims of the individual manufacturer. How can the farmers tell who's who? Here is where the American Society of Agricultural Engineers can perform a great service.

Foreign Methods.

Over in England they have a Royal Agricultural Society, organized and maintained by farmers. Every year they hold some kind of field trial. The judge's report calls a spade a spade and does not consult the feelings of the manufacturer. Those reports are carefully studied, more for the judge's opinion than for the figures they contain. The opinions of a practical man and an expert count for more than mere figures, which too often do not mean anything to a man.

Over here we held five motor contests at Winnipeg. Each one yielded figures enough to make a farmer's head swim for a month, but not a word from the judges, not a single reason why one well-known engine might have shown up poorly when there were plenty of extenuating circumstances, nor a word of warning that the winner under any set of conditions might fall down badly under other conditions. It cannot be believed that the public got much benefit, and all the judges were public servants, at that.

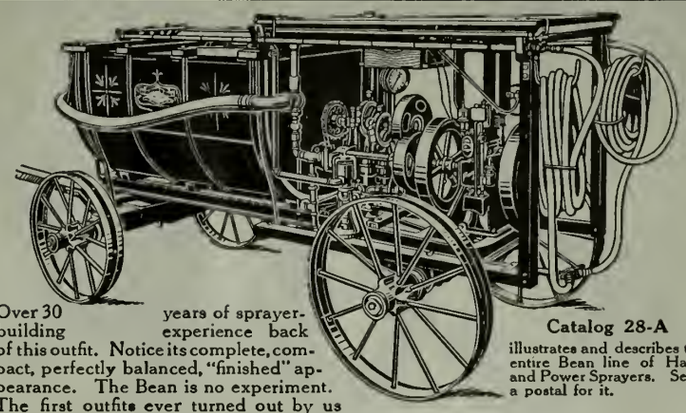
Then in Germany they have a great agricultural society modeled after the British. Every year the new machines and improvements are herded in one place separate from the main exhibits. Experts from the colleges, machinery experiment stations and technical high schools go over the assortment and pass judgment. For some there is the great silver medal, for others bronze, for others a simple diploma of recognition. Those that are weighed and found wanting are told to go and make up their deficiencies. There is no contest, no scoring, no hair-splitting. Farmers and the agricultural press alike know at least in a broad way where the machines stand.

Russia, France and Hungary are equally frank. Surely we have in our colleges and among other members of the American Society of Agricultural Engineers as high grade men and as honest as they have abroad, and the society could evidently take hold and do what the foreign agricultural societies are doing without turning things topsy turvy.

How to Do It.

It would not be a hard matter to assemble the machines from all over the country so as to pass on them. Suppose we had our committee at Orchard and Farm's tractor demonstration here last spring, or at the big show at Fremont, Nebraska, where there were 47 tractors. It would not be hard to throw out quite a few that are plainly in the experimental stage and to classify the rest as good, better and very good. One lecturer at Fremont, a college professor and a frequent Winnipeg judge, confessed that they of the colleges had been lagging behind and had let manufacturers talk to the farmers too much without putting on any brakes. He told farmers there that they ought not to expect to get a serviceable tractor for less than $1,000, at least until they were made in larger quantities than at present. That man is a leader. He is waking up. It is only a question of time before farmers in his State will get his opinion before

(Continued on Page 10).



Over 30 years of sprayer-building experience back of this outfit. Notice its complete, compact, perfectly balanced, "finished" appearance. The Bean is no experiment. The first outfits ever turned out by us are doing good service today. From the very start we have built quality into

Catalog 28-A illustrates and describes the entire Bean line of Hand and Power Sprayers. Send a postal for it.

Bean Power Sprayers

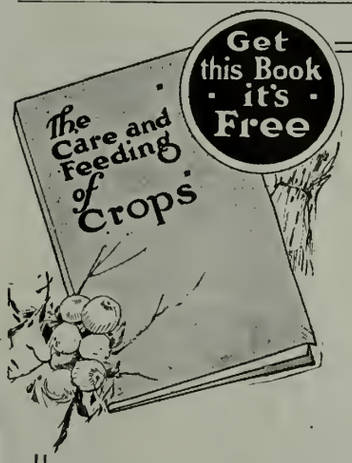
They're made complete under one roof—with the exception of the Novo engine—and we use the Novo because we couldn't build a better sprayer engine ourselves. Bean Power Sprayers are thoroughly high grade in every detail—including Bean Rustless Ball Valves, Bean Patented Pressure Regulator, Bean Porcelain-lined Cylinders, and many other advantages. Five sizes—from our wonderful little one-man, one-horse, one-line-of hose Midget to our great powerful four-line Giant. Send for our catalog and study the Bean. It's live reading for any grower.

BEAN SPRAY PUMP CO.

225 Julian Street San Jose, Cal.

THE BEAN IS THE BEST

3 Deliveries made from centrally located agencies in all fruit sections.



Maintenance of Soil Fertility

"There are three ways in which the essential plant-foods may be added to the soil. These are the growing and plowing under of cover crops, known as green manuring, the use of barnyard manure and similar products and the application of commercial fertilizers——"

"Unfortunately, in the West, especially in unirrigated sections, the use of green manuring is limited by the lack of sufficient moisture, while the supply of barnyard manure and related waste products is, of course, insufficient to meet the demand.

"These two types of manuring greatly improve the physical condition of the soil and are very beneficial. They should be practiced whenever possible, but, in order to supply sufficient of the available plant-foods to meet growth requirements and thus produce a large profitable crop, commercial fertilizers must be used."

This is a quotation from our book, "The Care and Feeding of Crops." You ought to get a copy at once. It contains most valuable information on soil treatment and crop raising.

Our "Gaviota Brand" Fertilizer supplies proper proportions of the Soluble and Available Plant-Foods, Nitrogen, Phosphoric Acid and Potash, to meet the Food requirements of the Plant throughout the growth period.

Write for our book, "The Care and Feeding of Crops," to-day. The knowledge contained therein may be the means of making a success out of failure in your crop raising.

THE PACIFIC GUANO & FERTILIZER CO. SAN FRANCISCO, CAL.

The Pacific Guano & Fertilizer Company
805 Security Building
SAN FRANCISCO, CAL.

The L. A. Fruit Growers' Convention

"All work and no play makes Jack a dull boy," is a saying which might well be remembered in future agricultural conventions. At the dairy convention at Modesto it was said that conventions should be two-thirds play and one-third business, and the proportion is not far from right. Of course it is every man to his own taste, but the average man when he travels half the length of a State is likely to have in mind as much what he can see as what he can hear.

With all due praise to the State Commission of Horticulture and to the Citrus Experiment Station for the excellent convention recently held in Los Angeles, we respectfully suggest that in the future sessions be held only in the morning and in the evenings, and that the afternoons be given to trips into the surrounding country to learn from seeing, not from talking. Everybody knows that he could read of some fine thing in ORCHARD AND FARM, in a Government bulletin, or anywhere else, and not appreciate it one-tenth as much as if he saw the thing itself. So, for a couple of future conventions, just try and see if the plan of giving a couple of afternoons to looking around and visiting with other men from all over the State will not develop more interest and do more good than all the addresses and papers that could be hammered into a man's head in a week's steady grind.

The County Horticultural Commissioners began their meetings Monday morning. Their convention merged into that of the Fruit Growers, and from Monday morning until nearly dark Saturday their sessions were filled to the brim with papers and addresses. Visiting with fruit men from all over, which is one of the most pleasant and profitable parts of a convention, had to be done at meal time only, or by staying away from the meetings. Trips to interesting places in the surrounding country had to be made by staying away from the convention also, which is not fair to the convention. From morn till noon, from noon till supper, from early evening till long after a busy farmer's usual bed time, for nearly a week running, makes almost too much of a good thing. The convention otherwise was excellent and reflects great credit on the people of Los Angeles and those in charge of the programme. All of the above criticisms apply to previous conventions as well as to this.

Another possible improvement might be to have fewer papers in a session, say two, or at the most three, and give the audience time to discuss the subject. By attempting to bite off too much, as the slang expression goes, the results are not always profitable. It is impossible to learn everything about every subject in one convention.

Lessons From Exhibits.

One point in which this convention excelled was the presence of numerous exhibits, both from manufacturers, dealers and others. Horticultural materials from orchard tractors to the fruit itself was displayed, including cultivators, fertilizers, irrigation equipment, spraying materials, orchard heaters, and so on. More fruit was on display than at any other recent convention, including apples from Modoc county in the North, to the Julian country near the Mexican line in the South. The latter district had a very large and fine display, as had Nevada county, in charge of D. F. Norton.

A very significant feature was the presence among the exhibits of much marmalade and other food products which can utilize culls and inferior citrus fruits. There was not only one or two exhibits of these, but quite a few, of extremely attractive appearance and flavor, also juices, citrus oils and extracts, and so on. Heretofore citrus fruit has either gone into direct consumption or to the dump pile, and it had to be pretty bad before it went to the latter place. Few industries can continue to prosper unless there are profitable by products or a profitable way to use the poorer grades without competing with the finer. The California citrus industry is about to a point when the poorer fruit has to be profitably utilized other than by fresh shipments, and from all appearances a fine start has been made on a fine footing before the pressure became too keen. The quality of the marmalade and such products could be highly commended.

University Exhibits.

The Citrus Experiment Station of the University of California had some striking charts and exhibits, indicating in a very effective way profitable changes in cultural practices. Cover crops, for example, in recent years have been losing ground in Southern California, but charts and models based on experiences at the Citrus Experiment Station showed spectacular results with different cover crops. They had been written and told of before, but the display made them seem real, not theoretical. There was a wonderful difference in plots on which rye was grown and those growing our ordinary sweet clover (sometimes called sour clover), Tangier peas, purple vetch, fenugreek and other nitrogen gatherers. Rye is known almost the world over as a fine supplier of humus, yet it took much organic nitrogen added to the rye plots before it gave as good results in production as sweet clover and Tangier peas grown as cover crops.

Then when it came to fertilizing, the university had glass tubes filled with make-believe oranges the size of small marbles, indicating the results with each plot, and there was an immense difference in the yield according to the fertilizers applied, and not only that, but twigs from typical trees of the plots showed the condition of the trees fertilized in different ways.

In somewhat similar fashion some very striking results were shown with both the yield and growth of different kinds of citrus trees grown on different roots—sweet orange, sour orange, pomelo and trifoliata—which should greatly influence every future planter of citrus fruits. This we hope to give in detail later. The sweet orange, although proven more susceptible to gum disease than sour stock, came out exceptionally well in competition with other stocks, a fact which deserves attention.

California Improves Methods.

California has long enjoyed the reputation of being the country per excellence for fruit production. How much this has been due to natural merit and how much to merit of handling fruits is a matter which needs to be taken to heart. J. P. Hale, the noted peach grower of Connecticut and Georgia, an authority on practical fruit growing in the East, addressed the convention several times, and when he got through it seemed pretty certain that a revolution in Eastern fruit growing was in progress which few Californians appreciated, and this change was due largely to California methods of packing and marketing.

There was an old tradition that peaches could be grown in only a few spots, that their season was only about two weeks long, and the way they were marketed in the East was something to discourage both buyer and seller. Then California peaches came along with a fine pack and in a different season, woke Easterners up, and as a result the peach season for Eastern grown fruit extends over several months and fine orchards are numbered by thousands. The Eastern peach is different from the California peach, in not being dried, and is much inferior to even the California freestone when canned.

Old apple trees, untilled, disease smitten and neglected, likewise have been doctored up, cultivated and fertilized; their fruit has been renewed in a quality and quantity never remotely dreamed of years ago; young trees have been set out by the million, and many city farmers are due to drop soon with a dull, sickening thud when the young orchards come into bearing and the necessity arises to market all this fruit.

The "Back to the Land" movement is strong in the cities; pigs are too dirty and evil smelling for refined tastes; cows are too much work and one has to get up too early to milk them, so fruit has been the popular thing in the East, mostly apples and peaches. Soon people who want orchards and know how to run them can buy fine Eastern orchards dirt cheap. California methods of marketing have been the cause of the Eastern fruit awakening. But it would be impossible to put the meat of a solid week's talk into one short account, and nobody is going to try.

Important Matters.

Important matters for the fruit and agriculture interests of California are indicated by the action of such conventions in resolution and otherwise. For example, the committee on legislation reported strongly in favor of the formation by the State Legislature of a State Department of Agriculture to be administered by a Secretary of Agriculture, to perform the duties now performed by the Commission of Horticulture, State Veterinarian, State Board of Agriculture and the numerous other boards and offices of the State relating to agriculture, the Convention approving these recommendations.

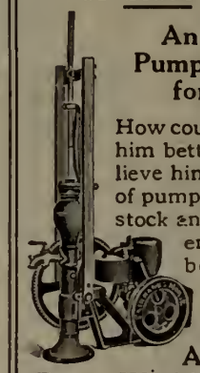
President Wheeler of the University of California has a committee of public men at work preparing a colonization plan to be carried out by the State of California and system of rural credits to be carried out the same way, and the Legislature was urged to seriously consider such a plan with a view to its adoption.

The so-called State Fruit Growers' Association is no formal organization. The State Commission of Horticulture simply holds a convention of which every fruit grower attending is a part. A committee on permanent organization endorsed the organization of a proposed State Horticultural Society with regular officers, which would publish a report of the proceedings of the conventions and actively work for the horticultural interests of California.

The convention also strongly endorsed the quarantine work of the State Commission of Horticulture, complimented the State Insectary, H. S. Smith, superintendent, for the effective work being accomplished with insect parasites, endorsed the plan of having a Monthly Bulletin of the State Commission of Horticulture, called for the placing of the State Statistician under the State Commission of Horticulture, called for the passage of the Raker bill by Congress, providing for the inspection of horticultural materials carried in the mails. Very hearty thanks were given to the State Commission of Horticulture, to the Citrus Experiment Station, and to those citizens of Los Angeles preparing for the convention, for the excellent programme and for the successful convention.

The proceedings of the convention are to be published in book form by the State Horticultural Commission, Sacramento, and persons who desire copies should apply to the Commission for same at once.

Put Your Christmas Money Into Gifts of Real Value

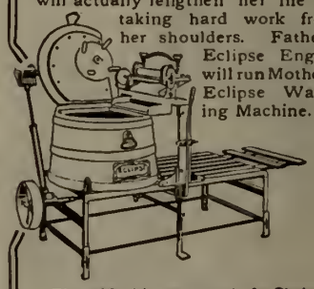


An "Eclipse" Pumping Engine for Father

How could you please him better than to relieve him of the work of pumping water for stock and house. The engine can also be used for many other purposes.

An "Eclipse" Power Washing Machine for Mother

will actually lengthen her life by taking hard work from her shoulders. Father's Eclipse Engine will run Mother's Eclipse Washing Machine.



These Machines are ready for Christmas delivery and the prices are moderate. Information on request.

Fairbanks, Morse & Co.
Los Angeles - San Francisco
Portland

If in Doubt— Plant Prune Trees

The demand for Prunes is constantly increasing and California must supply this demand. With a cheap water rate thru to the Eastern states, giving California growers control of this market, prune trees become

Staple Money-Makers

In the export market they compete successfully with European grown varieties.

Our parent trees of French, Imperial, Sugar and Robe de Sargent have been carefully selected from trees having the best record of QUALITY, PRODUCTIVENESS AND SIZE OF FRUIT.

WRITE US FIRST

The Silva-Bergtholdt Co.
P. O. Box A Newcastle, Cal.

WEALTH IN INVENTIONS. Patent your ideas. Send for our Free book, and advice How to Succeed. SUES & CO., Attys., 563 Seventh St., Washington, D. C.

Wanted Ideas Write for List of Inventions Wanted. $1,000,000 in prizes offered for inventions. Our four books sent free. Patents secured or fee returned. VICTOR J. EVANS & CO., 836F, Washington, D. C.

When writing to advertisers who use this magazine

PLEASE

mention that you saw their advertisement in ORCHARD AND FARM

The BULL TRACTOR $495 COMPLETE

"A Giant in Power
A Midget in Cost"

It Does the Work of 5 Horses

The Bull Tractor Delivers 5 Horsepower at the Drawbar and 12 Horsepower at the Belt

It Is a Portable Engine Too

Costs Less to Buy Costs Less to Keep

In addition to doing all the work of five horses in pulling Plows, Harrows, Seeders, Harvesters, Mowers, Drills and Discs, it will saw your wood, grind feed, run the Fanning mill or do any work that a stationary engine can do.

It can go anywhere, to any place where power is needed and there is work to do.

Costs Nothing When Not Earning

In this alone the **Bull Tractor** has it on horse flesh. When not in use it costs nothing to maintain—no new equipment is needed—it can be instantly hitched to any gang plow or any other farm implement you have.

No keen, sensible farmer can afford to be without a Bull Tractor.

It's more dependable and more reliable than horse flesh and its low first cost makes horses too expensive to buy while its low cost for upkeep makes horses too expensive to keep.

The Bull Tractor is not only the lowest priced good tractor on the market, but it is the simplest—has fewer parts by far—is easy to run and easy to buy—just think of it—it does the work of five good horses and costs less than three poor ones.

Our Tractor Book Is Free

Write for it and learn some real tractor facts and why it will pay you to invest in a Bull Tractor. Write to-day and get the book by return mail.

HUGHSON & MERTON, INC.

Pacific Coast Distributors

530 Golden Gate Ave., San Francisco — **1229 South Olive St., Los Angeles** — **329 Ankeny St., Portland**

Our agents are taking a car load a day. Where we are not represented we want live agents to wire for options on territory.

Method for Pickling Olives

Please give me the recipe for pickling ripe olives and keeping them black.—J. R. W., Kelseyville, Calif.

Prof. Frederic T. Bioletti of the University of California in a circular on the olive has this to say on pickling the ripe olive.

"The pickling of olives involves three steps: 1. Treatment with lye to neutralize the acidity and bitterness. 2. Repeated soaking in water to remove the excess of lye. 3. Salting by soaking in brines of gradually increasing strengths.

"(1). Neutralization. Soak the olives for 12 hours in a solution made by dissolving 1½ pounds of caustic potash in 12 gallons of water. Very bitter olives may require a second treatment with fresh lye; sweeter olives may require a weaker lye. With soft olives 1½ pounds of salt should be added to the lye. The olives should be kept submerged by means of a floating cover and the lye drawn from the bottom and poured over the top two or three times to insure equal treatment.

"(2) Soaking. When by examination of the color of the flesh of the olives, it is found that the lye has penetrated nearly to the pit, they should be removed to pure water. This water is renewed at least once a day until the lye is removed, which requires two or three days. With soft olives, a brine containing about two pounds of salt to 12 gallons of water should be used for removing the lye.

"(3) Salting. When the lye and most of the bitterness have been removed, the olives should be placed in stronger brine. If the olives are to be canned or bottled, a brine containing about five pounds of salt to 12 gallons of water is sufficiently strong. If they are to be kept in barrels, 10 or 12 pounds of salt will be needed. The olives must be prepared for the strong brine gradually by being placed in new brine every three to four days. Each brine should be about two per cent stronger than the last.

"Precautions. Strong lye tends to soften the fruit. A second treatment in weak lye is better for bitter olives than a strong lye. Salt has a tendency to harden the fruit and can be used to counteract the softening effect of the lye with very ripe olives. Strong lye will shrink and shrivel the olives unless they are prepared for it by solutions of gradually increasing strengths.

"Color. With ripe pickles, the object is to have the color as uniform as possible. Uniformity is obtained by pickling each variety by itself, by having the fruit as evenly ripe as possible, and by exposing the olives to each solution in as uniform a manner as possible. Spotting comes usually from unevenness of the lye treatment, and especially from allowing some olives to float on the surface. Depth of color is obtained by having the olives thoroughly ripe. By exposing the olives to the air for several hours between the various solutions, both the depth and uniformity of the color are increased by oxidizing and browning the flesh.

"With green olives the air should be excluded as much as possible, until the final brine is reached. A little vinegar improves both the color and flavor of green olives."

It may be rather later than is best to give receipts for pickling olives, but others besides the inquirer may wish to pickle some fruit now that the method is given. We call especial attention to the use of salt to keep soft olives firm, which deserves notice when olives are pickled late in the season. Olives hang on the trees very long and unless frosted can with care be pickled very successfully much later than is customary.

JUDGING FARM MACHINERY

(Continued from Page 7).

they try an unknown rig, whether the movement becomes national or not.

Take the small tractor that farmers have been calling for these many years. The private scrap heaps of many large manufacturers are full of small tractors. Many light tractors have been put out by small concerns, only to flash in the pan, break their backers, and sour the public on the whole small tractor game. No one can estimate the harm that has been done to reputable manufacturers by these constant failures, failures that could have been predicted after ten minutes' investigation by anyone entirely familiar with the situation. Time, effort and money could have been saved by a little advice from men on the outside who were looking from the farmer's side of the fence. We all need friendly criticism.

I will admit that it sounds like a dream, but the American Society of Agricultural Engineers is growing fast, both in size and in influence. It takes in college men, manufacturers and independent engineers in such a way that it can take care of the technical requirements without confusion. Starting now, it could easily put the stamp of approval upon four-fifths of the agricultural machinery on the market. At one big, central show each year, say the National Implement and Vehicle Show at Peoria, the newer types and those previously found wanting could be passed upon.

The American Society of Agricultural Engineers will participate in the engineering congress next year, and Mr. Ellis is chairman of the society's committee on arrangements. It is to be expected that he will secure a full discussion of this vital question at that time.

CHANGE IN ORANGE PRUNING

(Continued from Page 6).

ing of the soil. None of these gummy trees show any signs of the trouble recurring. Pruning was heavy on them so as to take the strain from the roots and they look well and are bearing good crops.

And as said before, although this grove is an exceptionally good one, and the results exceptionally well marked, the final rest is getting similar results on an old grove which has slacked up in bearing, though otherwise all right, and there are enough of these that have "come back" to prove that the tree management which brings results in one case works well in another.

The fundamentals of the whole thing are to keep the other and less vigorous branches out, to give the rest of the tree, including the inside, a chance to get a start, and to remove the vigorous green shoots which some remove under the erroneous idea that they are water sprouts, suckers, or undesirable wood, rather than the very best thing for a tree.

The Cost of a Telephone Call

DID you ever think how much it costs to give you the telephone right-of-way anywhere, at all times?

Your telephone instrument, which consists of 130 different parts, is only the entrance way to your share of the vast equipment necessary in making a call.

Your line is connected with the great Bell highways, reaching every state in the union—with its poles, copper wire, cross arms and insulators in the country; its underground conduits, manholes, cable vaults and cables in the cities.

You have the use of switchboards costing upwards of $100,000,000. You enjoy the benefits of countless inventions which make possible universal telephone talk.

Your service is safeguarded by large forces of men building, testing and repairing lines. You command at all times the prompt attention of one or more operators.

How can such a costly service be provided at rates so low that all can afford it?

Only by its use upon a share-and-share-alike basis by millions of subscribers, and by the most careful economy in construction and operation. A plant so vast gives opportunity for ruinous extravagance; and judicious economy is as essential to its success as is the co-operative use of the facilities provided.

That the Bell System combines the maximum of usefulness and economy is proved by the fact that in no other land and under no other management has the telephone become such a servant of the masses.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

Every Call means a Pair of Wires from Subscriber to Subscriber, however many Calls may be made or however far apart Subscribers may be

The **Marlin** Model 1897 **Repeating Rifle**

Shoots all .22 short, .22 long and .22 long-rifle cartridges; excellent for rabbits, squirrels, hawks, crows, foxes and all small game and target work up to 200 yards.

Here's the best-made .22 rifle in the world!

It's a take-down, convenient to carry and clean. The tool steel working parts cannot wear out. Its Ivory Bead and Rocky Mountain sights are the best set ever furnished on any .22. Has lever action—like a big game rifle; has solid top and side ejection for safety and rapid accurate firing. Beautiful case-hardened finish and superb build and balance. Price, round barrel, $14.50; octagon, $16.00. ¶ Model 1892, similar, but not take-down, prices, $12.15 up.

Learn more about all Marlin repeaters. Send 3 stamps postage for the 128-page Marlin catalog.

The Marlin Firearms Co., 116 Willow St., New Haven, Conn.

TREES TRUE TO NAME · THE SILVA-BERGTHOLDT CO. · NEWCASTLE, CALIF. · PLACER NURSERIES

Clingstone Peach Trees

TUSCAN! Ours are the improved Round Tuscans—firmer, more symmetrical and uniform, Finer Grained, less subject to Wind-Fall and Split-pit, and preferred (to the extent of $2 to $5 more a ton) by canners to the oblong Tuscans commonly propagated.

PHILLIPS! We cut our buds from a block of trees that have proven an exceptionally good strain of this variety. Peach trees are always a safe investment—the demand is large, the price firm, and the profit good. What more can you ask?

THE SILVA-BERGTHOLDT CO. "Fruit Tree Specialists," P. O. Box F Newcastle, Cal.

TREES TRUE TO NAME · THE SILVA-BERGTHOLDT CO. · NEWCASTLE, CALIF. · PLACER NURSERIES

The Problem of Getting Started

To ORCHARD AND FARM—Last month Orchard and Farm discussed the problem of a man with very little means trying to start himself on a farm of 10 or 20 acres and make a success of it.

I submit the following propositions as one that should work out to perfection in most any part of California. In fact, it is entirely a California proposition.

In the first place you will notice that most all the valleys in this State are surrounded by brushy hills, land that is not much account for anything but pasture. This can be bought much cheaper than the fertile valleys.

Now, suppose the would-be farmer can get 15 or 20 acres of level land adjoining these hills. Let him plant 5 acres to alfalfa, 5 acres to spineless cactus and 5 acres to pasture, stables, etc. He keeps dairy cows, hogs, chickens and turkeys, all in proportion to his supply of food, of course. By controlling a larger acreage on the brushy hills the stock would have a wider range for pasturage, especially the hogs and turkeys. He should build his house in the center between the alfalfa and pasture.

Now, he feeds all his stock on alfalfa and spineless cactus leaves, the hogs and chickens would be fed the skim milk in addition thereto, to give them a proper diet. In the fall, September, October, November and December, the best improved varieties of this spineless cactus are loaded with a delicious variety of ripening fruit. This is the time of year to pen up the hogs and turkeys and fatten them for market, and this cactus fruit is the very best kind of food to put fat on this kind of stock. Mixed with a little grain it will be ideal. Also in the fall the hens are molting and eggs are high. Now, I find by my own experience that by feeding this cactus fruit to the hens it doubles the supply of eggs. While the hens turn up their noses and look with contempt at apples and all other kinds of deciduous fruits, they just go wild over a mess of cactus fruit. The large amount of sugar and mineral salts contained in this fruit tickle and stimulate their appetites, give them renewed energy and send them back to laying eggs.

Now, you get rid of the marketable hogs and turkeys while this fruit is ripe, and at the same time make a bunch of money off the hens' eggs. The fruiting season of the cactus occurs so nicely with the turkey-hog market that one would think that they were specially made for each other.

Of course this cactus fruit is good for human consumption also; but it grows with such lavish abundance that one can afford to feed part of it to his stock.

I am fattening four children now, as well as a bunch of chickens and turkeys, on this fruit, so I know what I am writing about.

Now, I mentioned that it would be well to locate the house between the alfalfa and pasture land; this was for sanitary purposes. Next year, or at least every two years, you remove the pasture, cow stables, hog pens, chicken houses and the whole contraption over on the green alfalfa patch and plow up the entire pasture and barnyard, and sow it to alfalfa; and let your stock run on a fresh green field. Also the family and all their litter and sewerage—keep changing it and plowing it under and growing alfalfa on it. If the family went east of their house for all purposes this year, next year they go out west. And the children, as well as the young hogs and chickens, will be able to romp and play on green clover, unalloyed with the volatile emanations of the barnyard or cesspool. There will be neither, all the refuse will be nourishing alfalfa.

Or the better way is to divide the alfalfa field into three parts, one-third pasture and the other two-thirds to alfalfa. Under this arrangement the stock pasture can be moved every year, while the alfalfa would have two years' growth in each field, the stock completing the circuit in three years.

The cactus patch could not be moved every year, but the surplus manure could be spread among the cactus to the great benefit of that plant. The cactus is a native of this State and grows without much care or moisture, and seems to be capable of drawing most of its nourishment direct from the atmosphere without taking the substance from the soil.

You will notice that under these arrangements all waste would be eliminated, and the place kept in a sanitary condition. Everything goes back on the land to make new crops, and the fertility of the soil will be indefinitely conserved. The real cause of the fall of empires is because all their grain fields, livestock and other human foodstuff eventually find their way into the sewers and are run into the sea. This has happened to every empire but China. This wily Celestial saves all his sewerage and puts it back on the land to raise new crops, and it is confidentially certain that his empire will endure forever.

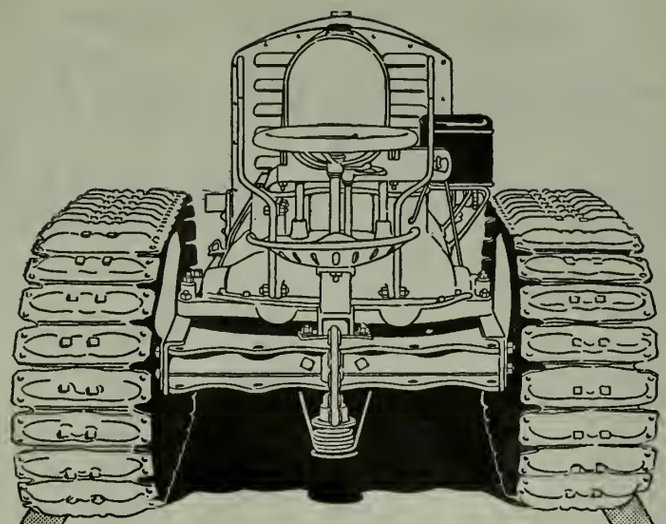
This farm would need water to irrigate the alfalfa and for domestic purposes. That can be found most any place in California, and lifted to the surface by a deep-well pump. Either gasoline or electricity can be used for power.

G. D. CUMMINGS.
Los Altos, Cal.

NITRATE IN ROCK.

A couple of years ago agricultural scientists were amazed to hear that some soils in the Rocky Mountain States, notably Utah and Colorado, apparently were being rapidly filled with nitrate salts, as nitrate of soda and nitrate of lime, and that the increase in nitrogen seemed to be due to the presence of a certain class of bacteria in the soils. Further investigations seem to disprove this idea entirely and Bulletin 134 of the Utah Experiment Station, which has just been issued, seems to show conclusively that the increase in nitrogen is due to the fact that certain rock formations in that territory have a large amount of nitrate salts in their make-up. Nitrate salts dissolve very readily in water and they seem to have been washed out of the rocks by seepage from irrigation ditches and otherwise, gathering in low spots in such quantity as to destroy vegetation. Thus disappears another starting theory, though from the viewpoint of agricultural science the presence of great amounts of nitrate in natural rock is almost as surprising as the idea that bacteria had something to do with the increase of nitrate salts.

Leaf spot of the sugar beet is a widely distributed and serious disease of the sugar beet, being found plentifully in California, as well as other parts of the world. A description of it and recommendations as to its control are given in a new Farmers' Bulletin, issued by the U. S. Department of Agriculture. It is shown that deep fall plowing is a big help in the control of the disease, also the cleaning up of the beet tops and a good system of rotation. A combination of the three practically eradicates the disease. The same principles frequently apply to the control of many plant diseases.



more power to the cubic inch

To the builders of the first water wheel, the first steam engine, the first electric motor, and the first gas engine, power meant bulk.

Users demanded "more power to the cubic inch of mechanism."

The original inventions were refined, improved, boiled down. The huge water wheel is replaced by the turbine. Watt's crude engine has developed into the steam turbine. The electric motor has been lightened and compressed. The cumbersome gas engine of the old days has become an aeroplane motor—the highest example of a compact, light-weight power plant.

THE YUBA BALL TREAD TRACTOR

The modern farmer demands that his power producers be less bulky, more powerful, cheaper to operate and maintain.

To meet these demands, we have developed and built The Yuba Ball Tread Tractor. It gives "more power to the cubic inch."

There is a booklet describing it.

- - - - - - - - - - - - Cut Here - - - - - - - - - - - -

THE YUBA CONSTRUCTION CO.
433 California St., San Francisco
Dept 119

Gentlemen: Kindly send me a copy of your booklet "The Yuba Ball Tread Tractor."

Name ..... *P. O. Box* .....

Town ..... *State* .....

Size of Farm ..... *Acres.* *(Check main crop raised.)*

Fruit ..... *Rice* .....
Grapes ..... *Alfalfa* .....
Grain ..... *Hops* .....
Hay ....

Answers for Farm Problems

RAISING OLIVES—For two years I have tried to raise some olive trees from cuttings, but have failed and would like to try again. Having read the report about raising trees from seed in the November Orchard and Farm, I would like to ask which is the best seed to use. If the Mission, can Mission be grafted on Mission, or would it be better to graft Manzanillo on Mission or vice versa? How large or old must the seedling be before it can be grafted?—W. J. K., Fair Oaks, California.

On Page 4 of our September issue there is a short account of one person's success in raising olive cuttings which may be of help to you in your next attempt. When it comes to raising seedlings, not a great deal has been done in California, but the standard variety is the Redding, trees of which can be found all over California. It is easier to sprout than the Mission and it is to be recommended in place of the latter. If you have a Mission seedling, graft it to either the Mission or Manzanillo, as one will take as well as the other. There is at the Plant Introduction Garden at Chico a variety of olive from Northern Africa which promises excellently as a stock. You can probably get seeds by writing to the Bureau of Plant Introduction, Washington, D. C. Some wild Algerian olives have recently been tried in California which have made extremely rapid growth, but how they will work out as a stock it is too early to say. Professor F. T. Bioletti of the University of California informs us that in his opinion olives should be budded about September or October, a time when the bark is soft enough to lift well and the buds at the base of the leaves are well developed. These buds remain dormant until spring, becoming attached to the stock in the meantime. If they catch, the top can be removed just before growth starts, and if they miss, the top can be removed below the bud and a graft put in, giving in this way two chances at one seedling. The seedling may be budded when it reaches a size of from one-fourth to one-half inch in diameter, or about the thickness of a lead pencil. It can be grafted from that size onward.

CHAMPAGNE CIDER—Kindly tell me how to make champagne cider?—A. D. S., Ventura, California.

Champagne cider of commercial quality can be made only by persons of much skill and long experience. An attempt to make it without such experience is very inadvisable Roughly outlined, the process is to ferment in a cool place till most of the sugar is gone. It is then drawn off to remove sediment and put into bottles which are corked and the cider permitted to ferment more. If too much sugar is left the bottles will burst. The greatest difficulty is in getting a clear product, which can be secured only by very delicate handling; but a fair product, not very clear, can be secured by following the method just outlined. Commercially, champagne cider of a sort is produced by fermenting out dry, or until all sugar is gone, then clearing and carbonating with a little sugar. This, of course, is not the genuine champagne cider, but it is the simplest way to get a very fair imitation of the real article.

PIGEON FEEDING — Would you please tell me a good ration to feed my pigeons?—J. H. G., Marshfield, Ore.

This question was handed to G. S. Hopkins, proprietor of the Bancroft Squab Lofts, San Francisco, one of the most successfull and best known pigeon raisers of the bay district, who replies as follows:

Pigeons in captivity need a larger variety of good sound grains. A good ration, which I use in my own lofts and which can be fed almost the year round, is as follows: Red wheat, 20 lbs.; Egyptian or Kafir corn, 30 lbs.; small yellow corn, 15 lbs.; buckwheat, 5 lbs.; peas, 20 lbs.; millet, 5 lbs.; hempseed, 5 lbs. Yellow corn should be cut out all together in very warm weather, but in winter and cold weather it can be increased. The reason for not using yellow corn in warm weather is that it is very heating and will cause sickness in your flock.

Hempseed should be fed sparingly also, as too much will cause vertigo and wing disease, and birds affected, if cured, are of very little use as breeders.

The above ration should be fed in self-feeders, or hoppers, so that the birds can get all the feed they want, but cannot throw grain out on floors.

Keep plenty of feed in the feeders before birds at all times, as they will not overeat themselves.

Keep a good supply of sharp grit and oyster shells where birds can get them at all times; also keep good supply of sharp sand in flying pens.

If the above feed rules are carried out, there will be no trouble raising big fat squabs and plenty of them providing you have the right kind of birds and keep only mated pairs in your pens. One extra unmated bird in a pen will cause trouble, and your birds will show off and you will not get results, even though you may feed them the best way and give them the best of care.

RIGHT TREES FOR SOIL—I have a five acre poultry ranch ten miles north of Petaluma, four acres being planted with Royal Ann cherry trees three years old, and on account of it being too wet last winter I lost 75 per cent of them. The soil is two feet and and there is a layer of sand and clay next. It seems to hold the water in the winter and in places there is hardpan six feet down. The place has five per cent fall and there is no water standing on the top. Can you tell me the best trees to plant? I have hens on most of the land and don't like to have apple trees.—C. H. S., Petaluma, California.

As we understand the conditions, we should think that Bartlett pears would be the most desirable fruit trees to plant, both on account of the nature of the soil and on account of the commercial outlook for this variety. The blight is the extreme affliction of the pear grower to-day, and in your section, and in the coast counties generally, blight does not seem to amount to much. Likewise the market is very good for the pear, and persons with good fruit seem to have an absolute certainty of good prices for many years to come. The pear will stand a very wet soil through the winter and do well, while most other trees would die under similar conditions. While other locations would doubtless be more satisfactory for pears than is yours, we think from your description that pears will still do well on your place. In order to be sure you might write to O. E. Bremner, County Horticultural Commissioner, Santa Rosa, who will be very glad to call on you when in the vicinity and advise better than any other person could do, without seeing the place, just what fruit is best.

POULTRY SHOW METHODS—The agricultural class of the Selma High School is planning to have a number of contests this term, also a poultry show about May 1. We would be very much obliged to you for any suggestions for methods of conducting the poultry show and, if possible, an outline of rules to follow for them. We wish to make our contests a success, so ask information from those who might know something along that line.—A Member of the Class.

We would advise you to secure catalogues and premium lists from Pacific Coast Poultry shows, as listed in the various poultry magazines, such a list appearing in the September and October "Orchard and Farm." These premium lists can be secured by addressing the secretaries of the shows, who will furnish the rules and regulations, classes, premiums offered, and other information desired. Personal interviews with the secretaries of nearby shows will help the committees of the class immensely in preparing the show. In regard to the contests of various kinds, would advise communicating with B. H. Crocheron, University Extension in Agriculture, Berkeley, under whose direction a number of different kinds of contests by high school agricultural clubs were held during the past year in California. If any of our readers can suggest contests in growing plants or animals, such suggestions would be appreciated.

Our advice to the country boys is to think twice about leaving the farm home. We believe it would be better for them to learn at home rather than risk the failures which attend so many young men who go to the city from the farm in pursuit of high pay for light work.

A Tip on Almonds

On this continent Almonds are grown only in California. The American market alone demands *four times* the present supply.

With practically an unlimited home market and a monopoly of the product

Plant Almond Trees if you are seeking a real money-making investment. We have an extra fine lot of trees growing on Bitter Almonds, Peach, and Myrobolan Root, but as there is usually a shortage of trees on Bitter Almond, place your contract immediately—don't delay.

Write Us First

The Silva-Bergtholdt Co.
P. O. Box F Newcastle, Cal.

KIRKMAN'S
RELIABLE TREES

Trees that grow and bear true to name. Now booking orders for next season. Write us now about what you will want.

KIRKMAN NURSERIES
2027 Tulare St., Fresno, Cal.

Farmers *and* Orchardists *are making* Money *in* California

No land like its valleys for successful farming and fruit growing.

A cultivated acre will produce more revenue than any elsewhere.

No place like it for outdoor and country home life the year around.

The Pajaro, Santa Clara, Salinas, Sacramento, San Joaquin and Imperial Valleys, and 400 miles of Coast country, traversed by Southern Pacific lines, offer fertile lands to thousands.

Markets for every product of Farm, Orchard and Dairy.

Opportunities for Homeseekers and Settlers worthy the most careful investigation.

For particulars address Chas. S. Fee, Passenger Traffic Mgr., Flood Bldg., San Francisco.

SOUTHERN PACIFIC

Awards of Gold Offered Our Readers

Read the announcement of this new and novel competition in this issue and test your skill and ability.

Fifty Cash Prizes.

Can you count?

If so you are eligible to enter the big Puzzle competition which ORCHARD AND FARM starts to-day, and which will prove the most novel contest yet offered to the reading public.

The conditions of the contest, the prizes, and all information as how to enter, are fully explained on the two center pages of this issue.

The problem is one that readily becomes fascinating, a study that makes the young and old think quickly. It is just a human interest game that tests the brain, the patience and ambition of the hundreds who will try to find the best solutions to the problems offered.

Simplicity of the Contest.

This contest contains no trick, catch or chance. Time, accuracy, aptness, patience and study supply the requirements to reach a solution to problem No. 1, or the best solution to problem No. 2.

Any man, woman, boy or girl, is entitled to enter the competition if they can only count. That is all one has to do—just count.

The first prize of possibly $400 in gold is going to one who can count most accurately and also solve the second problem, the second prize will be given to the champion counter's nearest rival, and the third prize to the next in line for premier honors, and so on down through the list of fifty awards.

It sounds easy, and it is easy—if you know how. If you succeed the gold is yours.

Little circles are what you will have to count. You can count five of them very easily, ten of them with little effort, but can you count each and every one and arrive at the actual number contained in the chart? Is your memory still good?

How to Enter.

Remember that it costs nothing to enter the contest beyond a subscription of one year to the ORCHARD AND FARM at the regular rate.

Nothing but gold will be awarded to the winners. The value of the prizes ranges from $5 to $400. A feature is the Dividend Plan under which contestants can grade the value to suit themselves. For instance, the first prize is $100 and a dividend of one hundred times the amount paid by the winner on subscription.

Study the prize list carefully and note that the value of the prizes largely depends upon the dividends paid with the winning solution.

Contestants may secure subscriptions from their friends if they so desire and have the solutions registered in their own name.

In case of ties there will be as many prizes reserved as there are people tied before any prizes are awarded for less correct answers.

If there should be more ties than are prizes offered, those who tie will solve the second puzzle according to the rules and all who sent in less correct solutions will be eliminated.

When ORCHARD AND FARM sought to further the interests of its readers and increase its circulation, it decided to adopt something that offered an equal opportunity to all who entered the competition. The charts have been prepared by a student of mathematics with care and accuracy, but it takes no great mathematician to solve the problems presented. There is a correct solution. It can be obtained. Somebody will find it and receive a splendid reward.

STOP IMMATURE ORANGES.

The order of the United States Department of Agriculture that all oranges must have eight parts or more soluble solids in the juice to one part citric acid before they will be permitted to be shipped and sold in the United States seems to have finally solved the problem of protecting the market by preventing the early shipping of a lot of green fruit and so injuring the reputation of California oranges.

Year after year agreements have been made to ship no unripe oranges, but someone would want to get first crack at the early market, ship off a car, get good prices, and then there would be a scramble which would demoralize prices. Last year the United States Department of Agriculture stepped in, but without designating just what an immature orange was, thus helping very little and causing some trouble, but the definite ruling this season, which is sure of enforcement, appears to have done the business.

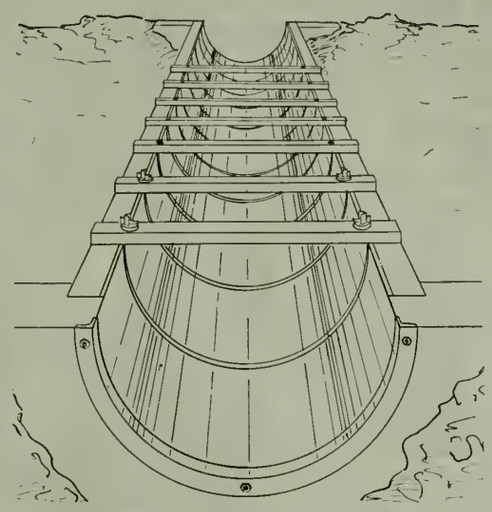
Heretofore early in the season car after car has been sold long before the oranges were fully fit to eat, with the public notice that they were being shipped to Australia. As a matter of fact more so-called "Australian shipments" were to parts of the United States than to Australia, and "Australian shipments" very early in the season after this will be much fewer than usual, and will be real instead of fictitious.

The orange shippers of Tulare county early in the season formed a protective league in which they agreed not to ship fruit falling below legal standards. As the law would prevent their doing otherwise, there was good reason for agreeing to do what they will have to do, but the organization will be of great assistance in enforcing legal regulations, just the same. In certain respects it helps the citrus shipments, as standardization units have helped deciduous shipments. The oranges will still be watched by the Department of Agriculture, but the Department will keep a much closer watch on shippers who refused to come into the voluntary organization, and by staying out indicate a desire to ship fruit at the earliest possible moment.

Early this season oranges were still on the trees, better colored and in better eating condition than oranges a year ago, when much shipping was going on, and picking was not to start for some time. Northern oranges are most excellent when fully ripe, and the new conditions are sure to be a big help in keeping up prices and in increasing the amount of fruit consumed.

California citrus growers will be interested to learn that Louisiana on November 19 held a "Louisiana Orange Day" to celebrate the possibilities of that state as a producer of oranges. It is stated in Louisiana publicity that "New Orleans is the logical center of the citrus fruit industry of America * * * superior to both Florida and California in its natural conditions as far as citrus fruit growing is concerned." Profits of $500 per acre are heralded as possible. Louisiana produces over 350,000 boxes of citrus fruits a year, "with a prospect of an output of 500,000 boxes next year and 1,000,000 boxes in two or three years." Removing the tariff on sugar and the attacks of the boll weevil on cotton are driving planters to plant oranges, rather a risky thing considering the new acreage in all orange sections.

The Improved Standard Flume

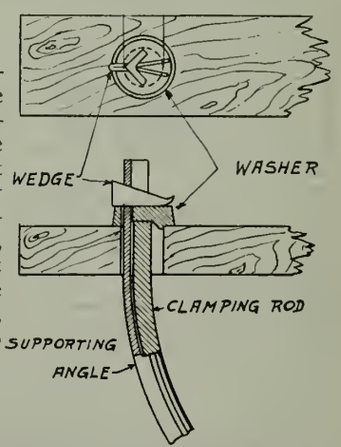


Perspective View of Standard Flume With Cross Bars Partly Removed.

Made with wood or iron cross bars. Improved in design, improved in construction, improved in material. Engineers, private and public, State and Government, pronounce it superior in design and construction to any other flume in the market. Built of commercially pure **Vismera Iron** (guaranteed 99.86 per cent pure) it is a flume built to last—and should be installed wherever permanence and economy are a factor.

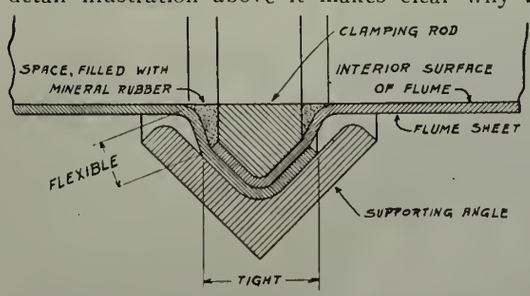
Construction

The view on the right shows details of wooden cross bars on the **Improved Standard Flume.** Particularly it illustrates clearly the locking wedge of metal against metal, eliminating all possibility of looseness. It shows the construction of the clamping rod, which is tightened to stay tight when the wedge is driven. The wedge is made as a split key, which is spread after driving. No other flume has the simplicity and absolute rigidness of the **Standard.**



The Standard Expansion Joint

The illustration below shows the cross section construction of the joint on **Improved Standard Flume.** In connection with detail illustration above it makes clear why **Standard Flume** never becomes rickety or second-hand. In any climate, in any job, whether one rod or 10 miles, the joints in **Standard Flume** are adapted to fit the job.



Vismera Iron (99.86 per cent purity guaranteed) from which **Standard Flume** is made is the finest grade of iron obtainable. Wherever used it is established as a standard.

Standard Flume is made in all practical sizes, with wood or iron cross bars, and we offer the flume as the most perfect ever designed.

We will gladly send details, estimates, etc.

Standard Corrugated Pipe Co.

516 RIALTO BLDG., SAN FRANCISCO
737 LAWRENCE ST., LOS ANGELES

ORCHARD and FARM

ESTABLISHED 1889

IRRIGATION

VOL. 26 DECEMBER, 1914 NO. 12

Issued Monthly at Hearst Building, San Francisco, Cal.
Country Life Publishing Co., Publishers
D. J. Whitney ----------Editor
D. W. Hill--------Advertising Manager
Wm. Tyler Smith--Circulation Manager

Eastern Office,
Wallace C. Richardson (Inc.),
41 Park Row, New York

Middle West Office,
James A. Buchanan,
Marquette Bldg., Chicago

SUBSCRIPTION RATES

By subscription 50c per year, three years for $1.00.

To Canada, by subscription, extra postage 24c per each year. Foreign, by subscription, 36c extra per each year.

5c per copy of all newsdealers.

Entered as second-class matter at the Postoffice at San Francisco, Cal., under the Act of Congress of March 3, 1879.

Address all communications and make all payments to Country Life Publishing Company, Hearst Building, San Francisco, Cal.

COVER ILLUSTRATION.

The cover illustration shows part of the poultry plant of Willis Hall, near Corcoran, Kings county. As was related and explained in a recent issue, the future egg supply of California is sooner or later to come mostly from the irrigated parts of California, where skim milk provides the cheapest and best possible animal protein for fowls; where the spreading alfalfa fields provide a cheap and profitable green range, and where the income from the eggs provides a welcome addition to the income of the dairy or diversified farm. This is a view on a big ranch, where hens are proving their worth. Even better are hens on the small place. The hen, well situated and cared for, is the biggest little thing in the country.

ORCHARD AND FARM changes its appearance somewhat this month, for the better, as are all changes on a growing paper. Whether the reading matter seems better or not, it will be noticed that the quality of paper and quality of printing are much more attractive than before. The difference is due to a change in the method of printing, which permitted a change for the better in the quality of paper. This has called for certain adjustments in all departments of the work, which will require a little time to get in perfect operation, but we have most excellent grounds for congratulation that the growth and progress of the paper are extending along all lines—in quality of paper and appearance, as well as in circulation and support. The next few months will see ORCHARD AND FARM retaining the improved appearance and going beyond the standard it has been attaining in all other lines also. Meanwhile we thank our readers for the support which is justifying these changes.

State Progress.—"For Satan finds some mischief still for idle hands to do." So says the old saw, and correctly. Our special reference at present is along the lines of legislation. The whole wide nation is apparently in a riot of legislative and political action. We have had the election, and we have done very fairly in the big majority of instances in turning down bad measures and supporting good ones, but no sooner were the votes half counted than various enthusiasts began planning for new initiative measures two years hence. Harking back to the proverb, we certainly are going to legislate for all we are worth, and we have either to get to work and do something useful and constructive legislately, or play the mischief in what is simply political experimentation. The best way to keep from doing wrong is to be interested in doing something good, and there is lots of good work open before the people of the West.

Change Land Policy.—One thing that can be called constructive legislation is a solution of the problem of rural credits and land development. Many States, including those of the West, sent delegates to Europe to investigate rural credits and agricultural co-operation a year and a half ago, which was common sense in active, vigorous form. A plan for adoption in America was developed which Congress was expected to make one of the leading matters of the last session. It did not touch the matter, and it is now up to each State to decide whether it wishes to wait until Congress convenes again and organizes a system for rural credits, or to go ahead and fix up a system itself. "Why not speak for yourself, John?" Closely related to this is the proposition of land development. If a man is to go back to the land, or to take a piece of grain-farmed land, build on it, irrigate and develop it to intensive production, he must have money and he must have a long time to pay that money, and moderate interest. Likewise, he must have some way to buy that land at a price near what the grain farmer sells it for. As it is, he pays two and three times what the original owner gets, and the difference is mostly frittered away in the cost of selling, or in the cost of finding the settler. President Benjamin Ide Wheeler of the University of California has appointed a committee of capable and interested men to struggle with this proposition, which committee is developing a plan worth while. It is largely up to the people to say whether they wish to busy themselves with something worth while like this, which will be real improvement, or whether they want to just try to shake things up and see if something good won't come to the top. Years ago we used to know, if we don't now, that the more cards are shuffled the dirtier they get. Apparently we have to legislate some way or other to be happy, and if it is not good legislation it will be injurious. There is agitation about putting the Belgians on California land. The only way we can do it is by smoothing out the difficulties in getting back to the land, and when we do that for the Belgians we do that for ourselves.

Our Horticultural Commissioners.—Here's to a body of the finest men in California, to men who every year are performing invaluable services to California agriculture, financially and otherwise; to men whose very office is often unknown in the counties in which they work—the County Horticultural Commissioners. In some counties everybody knows of them, for their work is too prominent to be overlooked; in others, the work can be of such a nature that few persons except the fruit growers know of it, and judging from letters frequently received here many fruit growers do not know that they have an horticultural commissioner, appointed by law and paid by the county, to whom they can turn when insect pests or diseases bother or other troubles develop. For many years there have been in some counties commissioners to perform horticultural services, and step by step the laws and systems under which they work have been improved, the men themselves by experience and training have developed in efficiency, until public horticultural work of the kind a commissioner should do is close to the best reason should expect. Do you hear of some insect pest or disease doing widespread injury, but not affecting you? Most probably it is because your horticultural commissioner exercises such care over all shipments that the pest cannot get a foothold. Do you ever stop to think how serious certain pests already in the county might be if they were not controlled? The horticultural commissioner is most probably largely responsible for the efficient application of those control methods which have been devised by the College of Agriculture or the United States Department of Agriculture, and besides he has probably found the necessary changes required in control methods for different localities. He prevents the development of not only fruit trees, but other pests, in neglected places; he sees that the trees you plant are healthy and vigorous; he is always ready to lend a hand in all of your fruit doubts and difficulties. And to cap it all, the county horticultural commissioner is often as little known and gets as little publicity as any public officer could.

Agricultural Changes.—There will be changes in our agricultural laws in the next session of the Legislature. Unless all signs fail, all State boards, bureaus and commissions related to the administration of agricultural laws will be put under one head—a State Department of Agriculture, like the United States Department of Agriculture. The California College of Agriculture and the Agricultural Experiment Station, being devoted to education and research, will not be part of this, though the police work now done by the university, like the Fertilizer Control, the State Insecticide Laboratory, and such departments, will probably be put under the new department. In certain respects a centralization of the work of the county horticultural commissioners, or say a greater uniformity in methods of operation may be desirable, but it is strongly open to doubt if the commissioners should ever be made State rather than county appointees. At the Fruit Growers' Convention recently held in Los Angeles the almost unanimous verdict was: Go ahead with the State Department of Agriculture, but make only minor changes in the work of the county horticultural commissioners. When the State Department is on its feet and in good running order, it is time to look and see what further changes should be made. That is what we call constructive legislation, something worth while working over. But after all that is merely a change in administrative methods and it is not fundamental, and working out a plan for rural credits which will make it easy to get back to the land and to finance farm operations is both fundamental and constructive. It beats all hollow local option in taxation, or the throwing open of taxation methods in adjoining counties or towns to wide experimentation.

G. Harold Powell, general manager of the California Fruit Growers' Exchange, former expert for the United States Department of Agriculture, and an authority on all matters of agricultural co-operation, is the author of a circular just issued by the University of California on "Fundamental Principles of Co-operation in Agriculture." There are a lot of mistaken ideas regarding co-operative marketing, and all interested in the subject should secure the bulletin.

The California Fish and Game Commission has issued Volume 1, No. 1, of a series of quarterly bulletins dealing with its work. The bulletin tells of the commercial utilization of ocean fish formerly considerable valuable only for sport, of bird life as a community asset, and many other matters relating to fish and game.

Light Weight Cushman Engines Best for Heavy Sawing

John Dare, Oroville, Cal., writes: "I have sawed about 350 tiers of wood with my 4 H. P. Cushman, and haven't had to make any repairs or lose any time. It is in as good shape as the first day I used it. The Cushman is the only 4 H. P. engine that can handle this work, **Throttle Governor giving extra power** when saw strikes the log. I have a 26-inch saw, with 100-lb. fly-wheel, and when I get this outfit under motion there is something doing. We have sawed logs as high as 20 in. through."

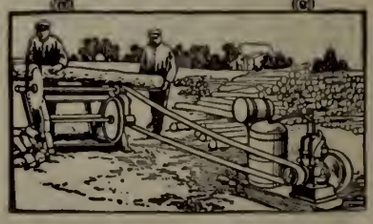
Light Weight Cushman Engines

For All Farm Work

Are the lightest, yet most reliable and useful engines made for farm work. Easily moved around to do all the stationary work, as well as attached to power driven machines, such as binders, hay balers, sprayers, etc. **Throttle Governed**, Schebler Carburetor, **Quiet and Steady**, Economical of Gasoline, **Perfectly Balanced**, Almost No Friction. 4 to 20 H.P. 40-page Book free.

Cushman Motor Works

880 North 21st St., Lincoln, Nebraska



DIG WELLS For Profit

With a STANDARD Outfit you can dig wells to 40 feet deep through any soil in a day. J. H. Warren, County Surveyor, writes: "I completed my 40-ft. well in ten hours."

Bores like an auger. Dumps like a shovel.

STANDARD EARTH AUGER

is the most useful implement on many farms. Digs holes for fence posts, caissons, foundations, piers, piling, supports, or to set out trees and shrubs. Also wells for vertical drainage or irrigation. Nine augers in one—adjustable by inches to nine sizes. Will not spill sand nor clog with clay—one blade opens wide to empty.

Our No. 1 Well Boring Outfit for well up to 40 ft. includes one No. 10 Standard Earth Auger, two expansion blades, 40 ft. of connecting pipe, 12 Standard malleable couplings with bolts, one Standard Internal Grapple. Price, delivered east of Mississippi, $12.00—west of Mississippi, $13.00. (We guarantee our No. 2 outfit to dig wells up to 100 ft. deep.)

YOU CAN MAKE MONEY

boring wells. E. L. Latham had orders to bore 8 wells before he had finished his own. Our illustrated booklet explains the many uses of the Standard Auger and shows how you can pay for the outfit twice over on your first well. Send 2c stamp for booklet.

STANDARD AUGER COMPANY, 1139 M., Newport Ave., Chicago.

$200 to $300 an Acre From a Walnut Grove

in full bearing is not unusual and many groves are producing even more. There's money in Walnuts.

MAYETTE! True Wiltz Strain! For productiveness, freedom from blight, and wonderful Quality, the Wiltz strain of Walnuts has no equal in any other of the standard varieties. Late Bloomer.

FRANQUETTE! True Vrooman Strain! Next to the Wiltz Mayette, the best Walnut for Northern and Central California. Late Bloomer.

Our Scions of Franquette and Wiltz Mayette, cut by R. Wiltz, a pioneer Walnut grower, are not only absolutely true to the strain, but are from selected trees. They are the best.

Write Us First

The Silva-Bergtholdt Co.
P. O. Box F Newcastle, Cal.

Feeding the Dairy Cow

By W. M. Carruthers

Common sense in cow feeding is the growing of feeds best adapted to our fields and feeding them in such a way as to get the greatest amount possible of milk. By this it is not meant that the purpose of commercial feeding stuffs should not be considered. It is more profitable to buy what concentrated feeds can be used profitably than to have the mistaken ideas of economy and go without them.

Many men feed with poor results even when they feed liberally. This is because they do not know how to handle the feed to get the greatest quantity of milk. The cow that is full of food is the one that is comfortable and will therefore make the best user of the food that she gets. Palatability is the consideration—that which the cow likes. A cow will never fill up on wheat chaff, because she does not like it, not because she does not consider it of high nutritive value and digestibility.

With this point in view a dairy-man will have in his mind which feeds to grow. Grow the feeds most adaptable to the farm which is most palatable. The most important consideration in palatability is succulence. Succulence is juiciness. Get succulence into the dairy cow's ration and there will be no trouble in having her eat enough. Succulence in summer when alfalfa growing is in full swing, is easy. In late fall and early winter when everything is dried up and we are waiting for the rains, succulence is hard to get.

The silo solves this question. The day is coming when no progressive dairyman will be without a silo to supply winter feed. Look over the State and you will notice that the men who are making a success of dairying are using silos. The cost of erecting a silo is now down to the place where almost every man can have one, nevertheless many of our dairymen cannot afford enough silo room to feed their herds the entire fall and winter through.

A thousand pounds of roots is worth a thousand pounds of ensilage for cow feed. Roots cost more to produce and are not as certain a crop. The production per acre is also considerably less.

Another way to get succulence is dampen straw with water and 20 per cent of feed molasses. This is not as good a method of getting palatability as with ensilage or roots, but it has its advantages. Inferior hay can be disposed of by mixing with roots, ensilage or feed molasses. Good molasses can be purchased for less than 20 cents a gallon. It is worth 25 cents a gallon for its nutritive value only. Successful dairymen consider it a profitable food, and where inferior roughage is to be disposed of, its value is hard to estimate.

Practical dairymen do not advise the feeding of poor ensilage alone; they prefer to have it mixed with hay or good straw. This seems to modify the flavor and causes the mixture to be eaten with greater relish. This mixture is especially advisable when ensilage has been cut in an immature stage. Corn cut too early never makes ensilage of the highest quality.

Give the cow a change. Do not feed ensilage to-day and roots to-morrow. This is not the way the cow likes variety; she likes it at each meal; a sudden change is not variety; variety comes by including in the ration as many feeds as possible. Successful dairymen feed ensilage in the morning, roots and hay in the evening, or vice versa. This affords variety.

A good ration usually has a variety. It has been found that the mixing of feeds in the proper proportions best adapted to the cow will increase the amount of milk; one-half gluten to a large producer or one-quarter to a cow not producing so much. A good proportion of barley and one-quarter bran makes a very satisfactory ration. Feed the cows producing the least milk less of the expensive feed.

In the morning feed the cow the feeds most acceptable to her. When she is hungry, give her the things she likes best, and she will make the best use of them. Her evening meal should be of the feeds which are the least acceptable. During the evening she will pick it over and eat of it what she wishes. One of the chief requirements in a cow's ration is flavor, and flavor can only be had in the careful management of the curing of the feeds. If first-class alfalfa is stacked outside and has no protection from the rain, it is not very acceptable feed. Alfalfa cut wet which becomes a little heated and moldy, is not acceptable. It has lost its flavor. Cut alfalfa hay when it is still on the fresh side; cut it before any of the heads are dead, and a few days before anybody else cuts theirs. There will be almost as many pounds of hay as if left longer, and there will be more pounds of digestible feed. Also if left longer, before cutting, one will gain five pounds in weight, but will lose ten pounds real food, as this food will turn to indigestible fiber.

WAR DOUBLES U. S. EXPORTS.

War's demand on American granaries, mills and packing houses as shown in an analysis by the Department of Commerce issued under date of October 30, resulted in record exportations of breadstuffs, meats and other food articles during September.

Many trade currents, broken by the European upheaval, have shifted to the United States, France demanding immense quantities of fresh beef, South America and Europe buying large amounts of flour, while nearly all the markets formerly supplied from other sources are importing millions of pounds of American sugar.

The value of foodstuffs sold abroad last month was $68,490,889, nearly double that of September a year ago, when the total was $38,786,624.

The war demand for wheat brought exports for the three months ending with September to the highest point ever reached in any corresponding period.

Total exports, including flour in terms of wheat, in the three months aggregated 89,250,000 bushels, compared with 59,000,000 bushels in that period a year ago. For September the exports of flour were about normal, but the wheat sold abroad was more than twice that exported during the month. The wheat total was 26,000,000 bushels.

France bought 7,572,000 bushels; the United Kingdom, 6,640,000; the Netherlands, 2,201,000, while other European nations bought 5,390,000 bushels. More than 2,560,000 bushels were exported to Canada, while another effect of war was the shipment of 580,000 bushels to Brazil.

Exports of flour to Latin America nearly doubled those of September one year ago.

Exports of fresh beef in September amounted to 7,000,000 pounds, 11 times that sent abroad in September, 1913. The 3,000,000 pounds of canned beef exported was eight times the amount sold in September last year.

The increase in refined sugar exports was tremendous. In September 52,290,773 pounds were shipped abroad, compared with 3,924,540 one year ago.

Exportations of cattle and sheep decreased, compared with September last year. More than 1,600 cattle were sold abroad in September, 1913, compared with about 900 last month. The decrease in sheep shipments showed about the same percentage.

FOR SALE
HOLSTEIN-FRIESIAN BULLS
Five registered bulls and 4 registered bull calves.
These calves are from Eastern A. R. O. grand dams and have for sire King Seges, 2d, one of the best young bulls in the State of New York. —AND—
1,000 Unrecorded Pure Bred Shropshire Ewes and Rams.
These sheep are large and in fine condition. Can be seen near Firebaugh. Prices on application.
MILLER & LUX, INC. Merchants Exchange Bldg. San Francisco

For Sale
Shropshire, Rambouillet and Cotswold-Rambouillet Rams.
1,200 Head
These rams are splendid types of their respective breeds. Their sires are imported rams from the best flocks in England, Canada and United States. They are priced right in any quantity to suit purchasers.
For particulars address
D. C. Wheeler, Inc., Reno, Nevada

MANURE
CARLOAD LOTS
HORSE, COW OR SHEEP
CALL OR WRITE. FRESH OR ROTTED
Pacific Manure & Fertilizer Co., 429 DAVIS ST., SAN FRANCISCO

NASH BROS.
TIPTON, INDIANA
BREEDERS OF DORSET SHEEP

TEAT FISTULA.

Quite frequently it happens that there is a leak, or fistula, somewhere in a cow's teat so that the milk comes out some other place as well as at the regular opening, which makes a dirty and troublesome condition. There frequently is difficulty in closing such fistulas, but a correspondent of "Hoard's Dairymen" seems to have the proper treatment.

He writes: "I used caustic potash to cauterize a fistula of the teat and it cured it completely. I used it because it was less trouble than to get a hot iron ready. The stick of potash was made sharp like a lead pencil and as far as possible was pushed into the hole of her teat. It was a very small hole. The caustic potash was applied four weeks before she freshened, thus giving time for the cauterized tissues to heal before she freshened."

K. W. Abbott of Milpitas, Santa Clara county, has added to his pure-bred Holstein herd sixteen fine animals, purchased from Joseph Levy of Manteca. These are of the famous Pierce stock and were secured by Levy from the Yuba City Dairy. All are animals of very fine breeding and quality.

One of Our Houses.
That Future Home—
Why Not Live in It NOW?
A bank account is unnecessary to build a home of your own. With our plans you can build that home yourself NOW. Others are doing it.
Our houses come ready to put up, costing from $194.50 up—permanent, NOT portable.
We furnish the lumber, trim, finish, doors, windows, paint, stain, nails, hardware, plaster or interior wall-board. Our plans contain the location of every piece, numbered to fit accurately and securely. You just "follow the plans." Satisfaction guaranteed. Your own ideas carried out. Send for illustrated catalogue. Write to-day.
Ready Built House Company
984 Broadway, Portland, Ore.

ORCHARD AND FARM'S

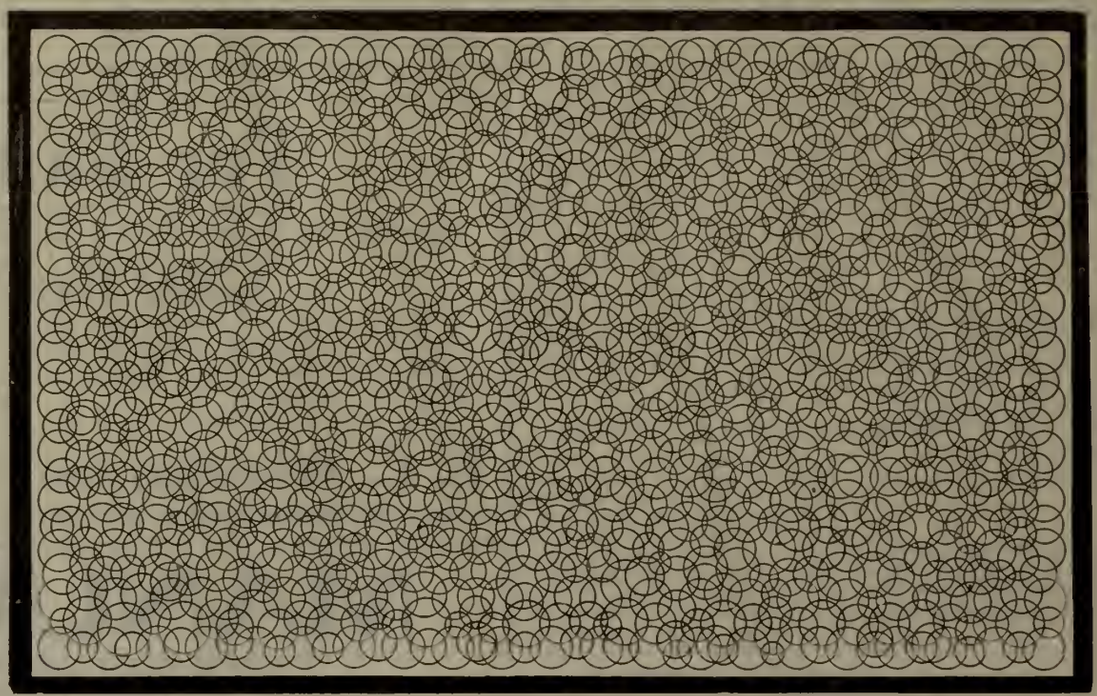
No Trick or Chance Involved in an Endeavor of the Two Pr

PROBLEM No. 1--Count the Circles

The Conditions Read Carefully

This contest is open to any man, woman, boy or girl. A payment on subscription to Orchard and Farm of from 50c to $3 entitles a contestant to submit a solution of the puzzle on the conditions stated. No employee of Orchard and Farm or member of his family will be allowed to participate in the contest.

The first and preliminary problem is to count the circles in the chart. All those who do this correctly will be required to submit a solution to Problem No. 2, to determine who are entitled to the prizes. However, should there be less correct solutions than there are prizes, only as many prizes will be reserved as there are people tied and the rest of the prizes will be awarded to those submitting respectively the next best solutions.



Copyrighted, 1914.

The problem is to count the circles. Every circle is complete and intersects or touches one or more other circles. There are no parts of circles or shams or deceptions of any sort in the puzzle. Accuracy and patience are the main requisites for arriving at the correct count.

The second problem (with conditions and illustrations as printed below) is to draw a continuous chain of circles across the chart and back again so that the numbers within the circles will total the greatest number of points. The chart of Problem No. 2 will not be changed either by the elimination or addition of any numbers, but to prevent contestants working out a solution in advance of the proper time, the numbers will be transposed and so rearranged that regardless of the time a contestant enters the contest he will stand on an equal footing with those who have preceded him or who may enter the competition later. In other words, the second problem will be composed of the exact numbers now appearing in it, but rearranged after all solutions of the first problem have been received and when the announcement is made that it is time to solve Problem No. 2.

In the event of ties on Problem No. 2 as rearranged, a second rearrangement will be made of the numbers, and those tied will be required to submit another solution of the problem to determine who are entitled to the prizes. Should ties ensue a third rearrangement of the numbers will be made to decide who is entitled to first, second, third, fourth prizes, and so on down the list. Should ties still ensue the contestants so tying shall receive the full value of the prize for which they tied, based on payments made, but under no circumstances will there be more than three transpositions of the numbers.

No money can be paid and only one solution of Problem No. 2 as it is presented, may be submitted. In case of ties resulting from persons working together, only one prize will be awarded jointly.

All those entering the contest will be required to abide by the rulings of the Contest Manager. In the event of any questions arising, the Contest Manager may appoint a committee to assist him in deciding them and those entering the contest do so with the understanding that such decision will be final.

In order that the Contest Manager may be in a position to judge whether a solution was actually worked by the person submitting it, all papers and data used in arriving at a solution must be carefully preserved and if called for submitted to the Contest Manager. Do not send papers unless called for.

HOW TO ENTER

A payment on subscription of from 50 cents to $3.00 for Orchard and Farm, by mail, entitles a contestant to submit a solution of the Circle Puzzle.

As many different solutions as a contestant may desire to register may be submitted to Problem No. 1 upon the same terms. Not more than $3.00, however, can be paid with any one solution.

As the main prizes have a greatly increased value, according to what is paid on subscriptions with the solutions winning them, all contestants should familiarize themselves with what these values are before they determine how much of a subscription to send. For instance, if you paid 50 cents, one year's subscription to Orchard and Farm, your prize, if you were the first, would be $150.00. If you paid $3 it would be $400.00.

No contestant will be permitted to send the same solution more than once. A contestant may pay $3 with each different solution, whether he pays all at the time he submits his solution or pays the balance before the contest closes.

To insure safety, subscriptions should be either registered or sent by money order or check. If stamps are sent, send either one or two cent denomination.

Whatever is paid on one or more solutions will apply on a continuous subscription to Orchard and Farm.

EXTRA PUZZLE CHARTS

SUBSCRIBE NOW, SEND YOUR SOLUTION LATER.

In order to get all the puzzle information published and extra puzzle charts, we suggest you send in your subscription NOW, your solution later.

Date Sent_____1914.

ORCHARD AND FARM, Hearst Bldg., San Francisco, Cal.

I enclose $_____for_____years' subscription to ORCHARD AND FARM.

It is agreed I am to receive extra puzzle charts by return mail, and that I may submit my solution on or before March 10th.

NAME_____

ADDRESS_____

First Prize—$
the amount paid i
$3.00. This prize
Second Prize—
amount paid with
Third Prize—$
the amount paid w
$125.
Fourth Prize—
amount paid with
Fifth Prize—$
amount paid in o
may be worth $50
TEN PRIZES
amount paid on s
prizes may be wor
FIFTEEN PI
amount paid with
$11.00 each.
TWENTY P
winning solution.

On the FIRST PRIZE

$1 Wins_____$2
$2 Wins_____3
$3 Wins_____4

Solution to Pr

All solutions to
not later than Marc
in the next issue of
in which to solve it.

Address All Solutions, Remittances and Inquiries to P

IG PROBLEM CONTEST

Win the Prizes Offered for the Best Solutions ms Presented

PRIZE LIST

to which will be added one hundred times e winning solution, payment not to exceed orth $400.

sh, to which will be added fifty times the g solution. This prize may be worth $225.

sh, to which will be added twenty-five times nning solution. Value of this prize may be

cash, to which will be added fifteen times the g solution. Value of this prize may be $70.

ash, to which will be added ten times the ion with the winning solution. This prize

n cash, to which will be added five times the with the winning solution. Each of these

.00 in cash, to which will be added twice the ing solution. These prizes may be worth

2.00 in cash, plus the amount paid with the es may be worth $5.00 each.

On the SECOND PRIZE		On the THIRD PRIZE	
Wins	$125	$1 Wins	$75
Wins	175	$2 Wins	100
Wins	225	$3 Wins	125

No. 1 Must Be Submitted Not han MARCH 10th.

zzle must reach the office of the Puzzle Manager , the second problem as rearranged will appear Farm, and two weeks will be given contestants

NO EXTRA CHARGE FOR ENTERING

This contest is offered as a means of entertaining our readers and to induce those who are not regular readers to become permanent subscribers. No extra charge is made for participation in the contest. The regular subscription price of Orchard and Farm is charged and every subscriber, old or new, can participate in the contest on this basis. The only condition is that subscription remittances must be sent in at the same time as your solution. If you are already paid in advance, your time will be extended.

Solutions unaccompanied by money for subscriptions will not be registered. The Contest Manager will not be responsible for money sent after solutions have been forwarded or in separate envelopes.

Every one entering this contest will be treated with equal fairness, and as there is no charge made for participation in this contest beyond an ordinary subscription to Orchard and Farm, all those entering will, as a condition, be required to abide by the ruling of the Contest Manager on any and all questions that may arise.

SUBSCRIPTION RATES ORCHARD AND FARM

One Year	$ .50
Three Years	1.00
Six Years	2.00
Nine Years	3.00

SOLUTION BLANK

CUT OUT THIS BLANK smoothly around the border and send it with your solution and money.

Date Sent_____1914.

ORCHARD AND FARM, Hearst Bldg., San Francisco, Cal.

I enclose $_____ for_____years subscription to ORCHARD AND FARM.

NAME_____

ADDRESS_____

SOLUTION AND PAYMENTS

(The following spaces provide for three solutions, with the payments you desire to make with them. You may submit one or as many different solutions as you wish to Problem No. 1. You can pay from one year to nine years' subscription to ORCHARD AND FARM. The total will apply on one continuous subscription.)

My Count is_____ $_____

My Count is_____ $_____

My Count is_____ $_____

Are you now a subscriber? Answer_____

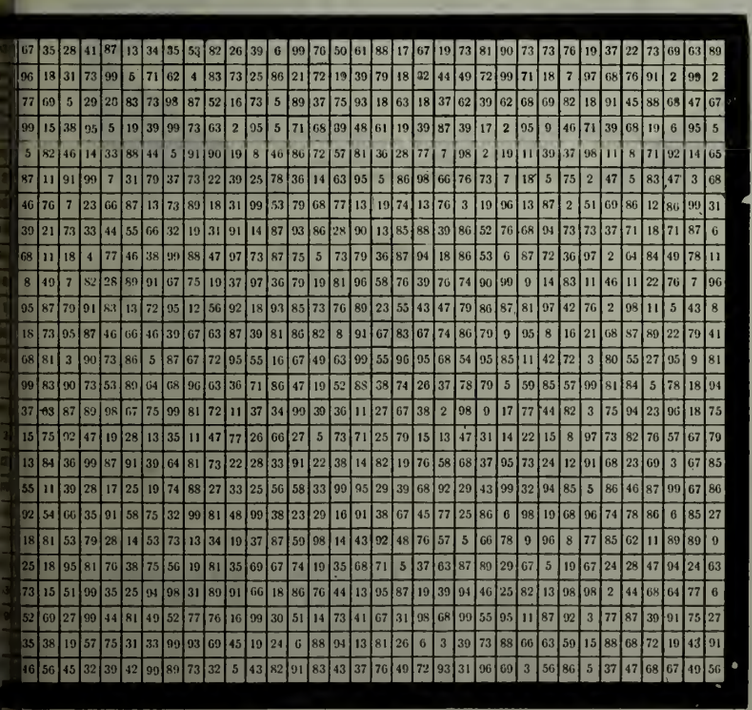
If you want paper sent elsewhere than above address give Name and Address below:

_____

_____

_____

THE SECOND PROBLEM



Copyrighted, 1914.

Draw a continuous chain across the chart from left to right and back again so that the numbers within the circles **will total the greatest number of points.** Start at any number you wish in the left-hand column.

The progress of the chain in crossing the first time may be up or down or to the right, **but not to the left.** In coming back it may be up or down or to the left, **but not to the right.** Each section must be at a right angle with the preceding and succeeding section, and must contain either three, four or five circles, **not less than three or more than five.**

When working back to the left, the chain must not cross itself, and no circle shall be drawn in a square which touches at right angles or obliquely any square which contains a circle that was drawn when going toward the right.

By section is meant a series of three, four or five circles in a straight line.

The circle at the angle where the chain turns is to be regarded as the end of one section and the beginning of the next. This, however, does not mean that the numbers in these circles are to be counted twice, or that the circles themselves count two when adding up the number of points encircled or the number of circles which form the chain.

The numbers in each square, where there are two figures, are to be regarded as double numbers, as ninety-nine, sixty-five, eighty-seven, etc.

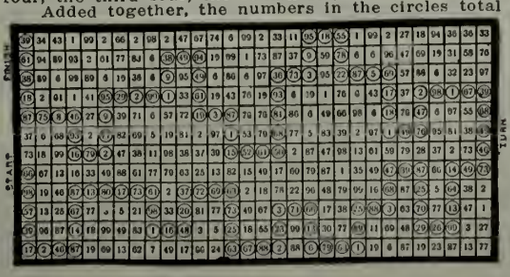
The circles do not have to be perfectly round or artistically formed. Contestants, however, should be careful to draw them so they will not obliterate the numbers. Circles can be drawn with either pencil or ink.

THIS ILLUSTRATES HOW TO WORK IT

The first section in the chain in the adjoining chart begins at number sixty-six (66) on the left-hand side of the chart and ends at thirty-nine (39) in the upper left-hand corner.

Beginning at sixty-six, the first section consists of five circles, the second four, the third four, the fourth six, the fifth three, and so on.

Added together, the numbers in the circles total 5,631.



The purpose of the adjoining chart is to furnish an example how to form the chain of circles. Any combination under the above conditions is permissible. The problem is to secure the greatest number in the Grand Total of figures within the circles.

LE MANAGER, ORCHARD AND FARM, HEARST BUILDING, SAN FRANCISCO, CAL.

Care of the Pregnant Ewe

By W. M. Carruthers

Perhaps the greatest stumbling block in the way of the inexperienced shepherd is in the care of his ewe flock during pregnancy. Either he feeds them too well, or on unsuitable foods, or he deprives them of air and exercise, or he goes to the other extreme and lets them brave the storms without enough food. Either condition will surely be fatal to his fortune, though of the two extremes the worse is that of too much food and no exercise. Such a course is surely fatal to his hopes of a large crop of strong lambs.

If one would have success with these pregnant ewes he should consider their condition in a state of nature. Then they roamed the hills, selecting the higher points as places to sleep; they sheltered beside rocks or under pines. They were not in large flocks and found sufficient food, as they were not restrained by fences. They had abundant exercise and always fresh air. Doubtless when their lambs came they were very strong and vigorous, able soon to run beside their mothers. Under ranch conditions to-day lambs are born very strong, and it is rare to find one so weak as to be unable to suck without aid.

The simple truth is that pregnant ewes must have so far as possible natural conditions. They must have enough food, and that of a suitable nature properly to nourish the growing foetus without stimulating too much the development of bone. They must come to lambing in good heart, what the farmer would call "fat," but not according to the butcher's standard. They must have abundant opportunity to exercise and to get fresh air. Thus treated, their lambs should come as strong as wild things and give little trouble. It is the natural thing for a lamb to be born strong, to live at birth, since all its ancestors have done the like since lambs were born into the world.

There is danger in well bred ewes highly fed upon such foods as wheat bran and alfalfa hay that the lambs may have excessive bony development, and it is not now the practice of the practical breeder to feed much bran before weaning, but to give instead bright, sweet corn stover, or grain straw, and alfalfa hay. Too much alfalfa hay alone will sometimes make the lambs rather large at birth. If the coarse forage is not abundant and of excellent quality, the shepherd should feed a small daily allowance of grain. A mixture of corn anl barley may be used, which should be fed in wide flat-bottomed troughs, so that the ewes can not rapidly swallow it as they will when fed in V-shaped troughs.

A run to an old permanent pasture is an excellent thing and if the grass is permitted to grow up in the fall and lie uneaten, no small part of the sustenance of the flock will come from that. A sheltering bit of woodland, in which they may wander, affords shelter and amusement, and well repays the ground on which it stands.

While the flock should be out of doors every fine winter's day, yet the shepherd should have his charges in mind and see that each ewe comes to the barn before storms break, and always the flock should be shut in at night. Yet unless the weather is very severe they should have much fresh air in their night quarters—a large opening on the leeward side is the best provision.

HEALTH VS. TUBERCULOSIS.

There is an increasing number of dairymen who believe that though tuberculin testing is a good thing to detect tuberculosis, it is not a satisfactory proposition when it comes to cleaning up the disease. They believe it is the same with cows as with people—that it is the run-down individual who gets tuberculosis and that few individuals would get it if they were well fed, well cared for and living so as to have lots of reserve strength.

Something like this is indicated on one large dairy in this State. There had been a long fight against tuberculosis through tuberculin testing and the removal of reactors. The test showed them up all right, but the herd kept on developing tubercular animals, and some tests were made which showed 40 per cent of young stock affected.

A change was made in dairy methods in ways that would naturally develop stronger animals. The young stock particularly is attractive and vigorous, with good feeding, care and housing, and as a result recent tests have shown a tuberculosis-free herd. It probably is very desirable to remove whatever animals have the disease and to see that no animals with tuberculosis are added, but after all, good feeding and care of the kind needed to build up fine stock are the things that mean healthy herds.

Experience on another very well-known California dairy showed that feeding had a great deal to do with tuberculosis in young stock. This is a certified dairy in a county where there is considerable tuberculosis. As most of the milk is sold, sometimes there is not enough for the calves, and during one period of scarcity skim milk from a creamery was bought for the calves. The next time they were tested 20 per cent reacted, against a very small per cent when skim milk produced on the dairy was fed. The reason was that the skim milk purchased contained tuberculosis bacilli. The results were so marked that no more milk was bought, an effort was made to obtain enough on the home dairy, and any deficiency was made up by feeding prepared calves' food and commercial milk substitutes. Since that time no more tubercular animals have been found than when the calves were fed the clean skim milk produced on the place.

BARLEY IN ALFALFA.

Many alfalfa raisers are in the habit of planting barley in their alfalfa in the fall and the practice is so good that it is unfortunate that it is not done oftener. It provides green stuff during the winter and makes the land productive at a time when it ordinrily is not producing anything, except, perhaps, some foxtail. And not the least valuable feature of the barley is that it keeps down the foxtail.

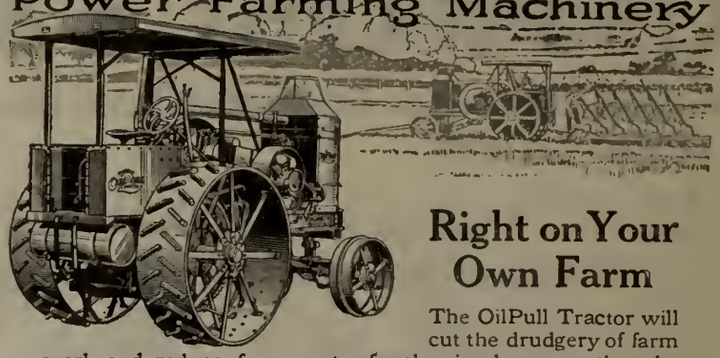
The several floodings that an alfalfa field gets during the summer, plus the packing of the soil by the mower, the horses' hoofs, and the hay making and hauling, or by the stock, if the field has been pastured, compacts the soil in a way that would almost be ruin for an orchard. A stirring up of the soil, when these conditions exist, is almost the same kind of a stimulant to the field that good cultivation and a soil mulch is to an orchard. That is why it is so profitable to use a disc, an alfalfa renovator, or a spring tooth on an alfalfa field.

With the soil torn up a bit it is possible to sow barley and get excellent results. Land on which alfalfa has grown is always rich and contains lots of nitrogen. Although the alfalfa takes up much of the space and the barley naturally cannot do as well as if the land were really plowed instead of scratched, a good stand can be secured. The amount of seed may vary greatly, being much lighter than would usually be sown on a clean field, in some cases, and in other cases much heavier The per cent of germination is not as great as where the land is plowed and a good seed bed provided.

It is possible to either pasture the barley or to let it go for hay. In the first case a heavy seeding is usually best, in the second a light seeding so that the alfalfa will have plenty room when it starts growth in the spring. In either case the land is producing something instead of lying almost idle, or growing only foxtail, and the mixture of barley and alfalfa hay is excellent and a vast improvement over the mixture of alfalfa and foxtail.

The safest kind of farming is that which makes it possible for the farmer and his family to live well. Even if large crops which must be turned into cash are produced, unless a large portion of the food and feed be also grown most of the cash must be used to buy the necessaries which doubtless could have been raised cheaper than the cash crops. It is not the amount of cash we handle that gives us profit, but the amount above the cost of production and marketing. We enjoy that which gives us the greatest comfort and convenience.

RUMELY
Power Farming Machinery



Right on Your Own Farm

The OilPull Tractor will cut the drudgery of farm work and reduce farm costs, for the simple reason that the OilPull is a year 'round proposition. It saves money plowing, harvesting, threshing, hauling, drilling and at other power jobs.

RUMELY OilPull TRACTOR

15-30 and 30-60 Horsepower

The OilPull burns cheap kerosene or distillate at all loads, at any kind of work. It is throttle governed—there is no fuel waste, the power is steady and uniform.

The OilPull is oil-cooled—no danger of radiator freezing. It is easy to operate—any intelligent person can run it after a little instruction. The 15-30 has two speeds for road work.

Ask for OilPull catalog FB1. You'll find it interesting.

The GasPull is a leader in gasoline tractors. There are no better stationary engines than the Rumely-Falk for kerosene and the Rumely-Olds for gasoline. Every Rumely machine is backed by Rumely service—49 branches, 11000 dealers.

RUMELY LINES

Kerosene Tractors, Gasoline Tractors, Steam Engines, Engine Gang Plows, Threshing Machines, Clover Hullers, Gasoline Engines, Oil Engines, Baling Presses, Cream Separators, Corn Machines, Lighting Plants

RUMELY PRODUCTS COMPANY
Chicago (Incorporated) Illinois
San Francisco, Cal. Portland, Ore. Spokane, Wash.

Cutaway (CLARK)
Disk Harrows and Plows
are for intensive tillage. Ask your dealer to show them. If he doesn't sell CUTAWAY (CLARK) implements, write us.
THE CUTAWAY HARROW COMPANY
Maker of the original CLARK disk harrows and plows
996 Main Street Higganum, Conn.

SECOND HAND PIPE
Very best quality of selected second-hand water pipe and standard screw basing pipe. For quality and low price you make no mistake when buying water pipe of the Weissbaum kind.
Largest pipe works in the West.
WEISSBAUM PIPE WORKS
165 Eleventh St., San Francisco.

Appreciation of Dairy Show

From recipients of cups presented by Orchard and Farm at the State Dairy Show held at Modesto have come letters expressing their satisfaction with the idea of the Show and their promise of support for future shows. The meat of the whole matter is, whether this will be made an annual affair or not. If it was a success in the first instance when organized on a moderate scale and without elaborte preparations, it will be many times such a success when it is known to be an annual affair with visitors and cattle from all over California. It is largely up to the supervisors and people of Stanislaus county to decide how great they desire such a show to be.

The dairy interests of the whole State need something to bring them together on an effective working basis, and they could be brought together better by a big dairy show than by any other one method. Stanislaus county, as the center of the greatest dairy district of California and as a purebred center, can profit greatly from such a show.

There may be doubts as to whether or not a dairy show should be held next year, when the Panma-Pacific Exposition will occupy everybody's attention, but it seems that a State dairy show would be more valuable then than at any other time. The people we wish to reach will come as much for California as for the Exposition. They can see some California stock there, but as part of the Exposition, not as a part of California, for San Francisco is hardly a typical California dairy section. They will go where they can see California dairying at home and nothing better could be done than to have some fine California stock gathered in a typical dairy county for several days as a regular annual event. The accompanying letters indicate the support Stanislaus county dairymen will give such a show.

We received the cups and appreciate them very much. Also the sample copies of Orchard and Farm, which we will send to different parts of the country. Yours truly,

H. E. CORNWELL.

I wish to thank you kindly for the two cups. They are certainly fine and I am very proud to show them to my friends. Please let me know if you have any cuts or photos of the cattle, as I want to have some made. I thank you again and remain, Respectfully yours,

ULYSSES G. STRADER.

I wish to acknowledge receipt of cup awarded me at the Dairy Show at Modesto for Grand Champion Holstein Bull, for which please accept my sincere thanks.

I also wish to thank you for the interest taken in making the show a complete success and hope it may be made an annual event and assure you of my help in every way possible.

Yours very truly,

G. W. BASHOR.

By this note I desire to acknowledge receipt of the cup presented by you at the State Dairy Show, Modesto, October 16, 1914, on the merit of my Guernsey heifer, "Missie Boy's Lady of the Fargutts." I also wish to thank you for same. It is beautiful indeed, and as it is my first prize I appreciate it all the more.

Inclosed find 50 cents, for which please send me Orchard and Farm for one year. Respectfully,

O. V. WILSON.

I have received the three champion cups awarded me at the Modesto Dairy Show. Please accept my thanks for same. Also for the copies of Orchard and Farm containing an account of the show. The cups are very handsome and I am quite proud of them.

I wish to assure you of my appreciation of the excellent work done by Orchard and Farm in making the Modesto Show a pronounced success and I note with much interest what Mr. Carruthers says in his article relative to the possibility of making it a great annual event.

I rather like the cut of my utility herd which you have run on the cover page of your November issue, and I would like to have half a dozen of these photos if you can supply me with them.

Thanking you for past favors and wishing you continued success, I remain, Yours very truly,

GUY H. MILLER.

Yours of October 31 with cup received, for which accept many thanks, as I prize this cup very highly, it being my first cup. You see I am new at the business, having started in the registered Jersey business only three years ago with eight young cows and this being my second attempt in the show ring, I have a right to feel elated. I understand you intend to make this an annual occurrence. Well, it should be, as Stanislaus county is the banner dairy county of the State, and I think we made as great a start as the Great Waterloo Dairy Congress, for we had stock from several outside counties and also had displays from several business houses. From now on the whole State should be represented and make this a strictly stock and creamery show. I got my extra copies as well as my regular one again.

Thanking you and wishing Orchard and Farm every success, I am

Yours truly,

D. F. CONANT.

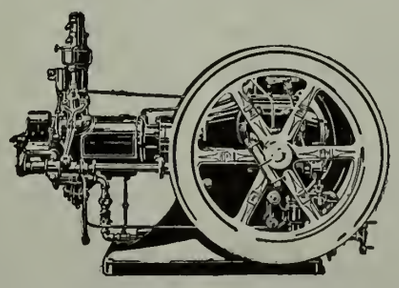
HOG HOUSE—Will you kindly give me a design for a general purpose hog house, to be used both for farrowing time and also for protection in winter for the whole herd? Am located in the San Joaquin valley in Tulare county. I have seen cuts of pens covered with chicken wire holding straw as a roof. Would this kind of a house suit our California conditions? — Subscriber, Oakland, California.

We have seen all kinds of hog equipment in California and we are increasing in the conviction that the simpler the hog house and equipment the better the results. Both pure bred and utility herds in the southern San Joaquin valley seem to have most excellent results with the kind of houses you suggest, as you will notice on another page. We are inclined to think that simplicity in hog equipment, and chicken equipment also, is desirable from the standpoint of cleanliness and, owing to the cholera danger with hog sand vermin for chickens, sanitation is one of the very important matters. The hog developed out of doors and in the mild climate of interior California an overhead shelter to keep off rain and hot sun, perhaps with a little protection on the south to keep off driving rain, and a pen for the farrowing sow is sufficient and excellent. Of course, very frequently more shelter is provided, but the other is enough to start on.

In filling a silo it is far better to keep the silage near the wall higher than the center. The surface of the silage should be saucer shaped. If kept in this manner the silage is forced against the side of the wall as it settles.

Each horse should wear his own collar, fitted by a person with common sense.

International Harvester Engines Give You Cheapest Power



WISE farmers buy International Harvester engines—Mogul or Titan—engines of standard construction with such features as accurately fitted piston and rings, extra large valves, prompt repair service, use of cheapest local fuel—features that make them last by far the longest and save the most money in the end.

Be sure when you buy your engine that it is an I H C engine, and you will be sure of best material and best construction. They are made portable, stationary, or skidded; vertical or horizontal; air or water-cooled. Sizes range from 1 to 50-H. P. They operate on both low and high grade fuels.

Not every local dealer can show you International Harvester engines. Write us for interesting catalogues and full information, and we will tell you the name of the local dealer who handles our engines.

The I H C Line

GRAIN AND HAY MACHINES
Binders, Reapers
Headers, Mowers
Rakes, Stackers
Hay Loaders
Hay Presses
CORN MACHINES
Planters, Pickers
Binders, Cultivators
Ensilage Cutters
Shellers, Shredders
TILLAGE
Peg, Spring-Tooth, and Disk Harrows
Cultivators
GENERAL LINE
Oil and Gas Engines
Oil Tractors
Manure Spreaders
Cream Separators
Farm Wagons
Motor Trucks
Threshers
Grain Drills
Feed Grinders
Knife Grinders
Binder Twine

International Harvester Company of America
(INCORPORATED)
Crawford, Neb. Denver, Col. Helena, Mont. Portland, Ore.
San Francisco, Cal. Spokane, Wash. Salt Lake City, Utah

A Visit to the Whitehall Ranch

By W. M. Carruthers

We arrived at Tracy on the beautiful morning of November 10, at 10 o'clock, to look over the Whitehall Estate properties. These ranches lie within four miles of the town of Tracy, and comprise 22,000 acres of land, made up of the old McLaughlin and Titus ranches. Five thousand acres are now under irrigation, 3,000 being planted to alfalfa. The other 2,000 are still growing barley, but eventually will be sown to alfalfa. Many thousands of acres of these lands have been reclaimed and the soil is of a silky nature, and very productive. There are still 5,000 acres of unreclaimed land, but at the present time they are working on it, and in a year or so it will be in shape to grow grain.

Tom McCreery, who has charge of the livestock on this great plant, met us at the station, and it was only a short time until we were whirled into the farm steading. On the way from Tracy to the headquarters ranch we saw automobile trucks loaded with gravel fixing the road, so that in the near future there will be a gravel road direct to the shipping point, eliminating all inconveniences from the winter rains.

Homelike Colonial Mansion of the Whitehall Ranch.

As we passed Camp No. 2, we saw 3,000 tons of alfalfa hay baled and covered with lumber which is to be used next year for irrigating purposes. This lumber will therefore serve two purposes. It will keep the alfalfa dry during the rainy season and in spring it will be pulled down and used for irrigating.

On our approach to the headquarters ranch it was evident that the ranch must have had at one time for its chief object the breeding of draft horses. Two mammoth barns, with the very latest of modern sanitary equipment have been erected. Each of these barns takes care of sixty-four draft horses. One of them has been modeled something after a box-stall fashion, the box stalls being made by swinging gates, so that when it is necessary to use it only for stall purposes these gates can be swung up against the outer wall, allowing a clear passage way up and down the barn.

The feed process throughout these large barns is all handled from the loft. Each stall has a galvanized spout running down into the feed box, so that the man on top can walk along and feed the horses without having to go up between them. At the present time there are 120 draft horses doing actual work on the ranch; part of them are getting ready for fall crops, others seeding alfalfa, while others are working on reclamation projects.

There are thirty-four registered Percheron brood mares, and from these mares a large lot of well developed colts can be seen. Most of the mares have been imported from France, and the horses which have been mated with them show that good judgment was used in the purchase of the stallions now in the stud.

At the head of this lot is Londrecitus, a horse imported by McLaughlin Bros. a year or two ago. This horse is a model type of the present day Percheron, weighing at the present time over 2,200. He has splendid action, good head, and a marvelous lot of good clean bone. This year he was made Grand Champion at the California State Fair. His colts are just coming and what we saw of them causes one to believe that even if he cost $7,000 he will soon pay for himself.

Another of the stud stallions is Jacquard, imported by Ruby & Bowers several years ago. This horse is considered by John W. Chapman the congenial manager of this plant, as being the most valuable horse on the place. His crop of colts last year averaged 90 per cent.

The other stud horse, Kapit, also imported, is of an entirely different type from the other two. He is more of a low down blocky kind, weighing over a ton, and would suit the fancy of many of our California horsemen.

These three stallions are all black in color, and the majority of the mares are also black. The Whitehall Estate Company will sell any one of these three horses, as they have one too many. Any one of them is fit to head the best registered stud in this or any other State.

This great breeding plant is divided into sections with a foreman or superintendent at the head of each department. It is their purpose to keep on breeding draft horses, but they also expect to develop first-class registered Hereford and Shorthorn herds of cattle. Their Hereford herd now comprises about thirty beautiful colored cows, a little more white than red, which is becoming the popular color among this great breed of cattle. Their original stock was secured from the two old herds of Senator Splawn, North Yakima, Wash., and the late Governor Sparks, Reno, Nev. Their crop of Hereford calves this year are very uniform in type, and the ten bull calves which they are now offering for sale are well worth the money they are asking for them.

Their Shorthorn herd has not yet arrived at the farm, but when it does come it will stand as one of the great herds of the Pacific Coast. It is two-thirds of the old N. P. Clark herd of St. Cloud, Minn. This herd of Shorthorns is without parallel for show yard winnings covering the past twenty-five years. It has been under the personal supervision of Leslie Smith, the peer of Shorthorn men among Eastern breeders. The record of this herd in the show ring for show breeding females has never been equaled, and the Scotch families represented are from the most fashionable strains. They are headed by a Whitehall Sultan bull, one of the very best ever bred at Anoka farms. This herd would have been here now, had it not been held up by the quarantine which is covering the Eastern States on account of foot and mouth disease. We predict a great future to this herd in California.

Group of Herefords on Rich, Low Lying Pastures.

The surroundings where the Shorthorn herd will make its headquarters are ideal. Along the bank of the San Joaquin river are several pockets averaging about 200 acres in size. These small, almost islands, are covered with a splendid stand of natural grass. In fact for years it has never been eaten down close enough to hurt it, much of the old grass going to seed each year. Each pocket is subirrigated from the river and remains green through the greater part of the summer. They are studded with oats all over, making an ideal pasture for our hot summer months in California. These pastures will provide almost all the feed for this Shorthorn herd, only in the late fall will they be turned on to the alfalfa pasture. These islands are not only splendidly adapted for grazing, but can be used for winter feeding during the season when hay is being fed. They are extremely good for this purpose, being high and dry, and their natural sod will keep them from becoming muddy.

Mr. Chapman does not expect to keep these cattle indoors very much; only the cows raising young calves will be housed during the severest of weather. California should not have large closed, poorly ventilated barns to house breeding stock for any of the cattle breeds. The more air and outdoor life they have the less trouble with tuberculosis. In the East, where the winters are severe and cattle have to be shut up a good deal of the time, the cows which are thin in flesh, or are natural heavy milkers, are more apt to take tuberculosis. If more of our cattle were kept outdoors in open sheds there would be less tuberculosis prevailing now in the State.

The matter of labor on these ranches has been more or less a source of trouble, much the same as it has been on many other large ranches of California. The division foreman's plan seems to cover the difficulty in maintaining heads for the different departments. These men are married and nice bungalows have been built for them to live in. Every convenience is given them so that their families will not be dissatisfied. The two large bunk houses which were built to employ the regular farm laborers are built in such a way as to have all the comforts that the men require. There are large porches built all around these houses, so at any time of the day there is some

Cherry Trees

Cherries are the first, the most attractive and the best fruit of the summer season. This, together with the fact that they are very profitable, yielding from $400 to $600 an acre, makes them a good "buy" for any fruit grower in position to raise them.

Our block includes Bing, Black Oregon, Black Tartarian, Burbank, Royal Ann, and other good varieties on Mahaleb and Mazzard Root. Write Us First.

THE SILVA-BERGTHOLDT CO.
"Fruit Tree Specialists"
P. O. Box F Newcastle, Cal.

GUARANTEED FROM THE ROOTS UP.

The FRESNO NURSERY CO. INC.

HONEST NURSERY STOCK

This is the season of year to think about the Nursery Stock you will need for next Winter's Planting. Submit us a list of your wants for quotations. We are headquarters for FRUIT TREES and GRAPE VINES. "Guaranteed from the Roots Up," and can please you in quality and price. Beautiful, Large Catalogue, Illustrated and Full of Information, mailed upon request Free. Address

THE FRESNO NURSERY CO., INC.,
Box 615, Fresno, Cal.

BERKSHIRE HOGS FOR SALE

10 Sows and 6 Boars

Ages 5½ to 13 Months

In Good Condition and True to Type

PRICES REASONABLE

For Particulars Address

HOPLAND STOCK FARM, Hopland, Cal.

shady spot where the men can rest. The wash house has sixteen large stationary bowls; there are also three bathrooms and three rooms with spray baths; also a large sitting room in each of these buildings, and each room has enough furniture in it for the convenience of those living there. All the buildings on the place are lighted by electricity, so that there is no need for lamps or lanterns, thus eliminating the danger of fire.

The future of all hogs produced on this ranch is the block, as the hog department is being run strictly from a commercial standpoint. At the present time they are running 700 sows, and at the time of our visit 100 of them were in the farrowing pens, the litters averaging more than seven head to the sow. Their system of handling this great hog plant is excellent and, barring any accidents, it should be a splendid success financially. They feed their sows grain and green feed while they are raising the litters, and until the

One of the Percheron Stallions.

pigs are weaned. The pigs are then started along with a ration of grain until they are about four months old. They are then turned out on alfalfa, receiving enough grain to hold up their natural flesh, thus not running down in condition while they are growing. After the grain is cut, which comprises thousands of acres, these hogs are turned onto the stubble and in the late fall they are rounded up and what are ready for shipment are sold to the packer, while the others that require a little more grain to finish are fed soaked barley until they are ready to be shipped. The farrowing pens and the hog plant in general is gotten up where not much expense has been incurred. The two rows of pens 12x16 in size are covered to keep the rain and the hot sun from the young pigs. The alley between the farrowing pens is open so that a wagon can drive up between them. Mr. Chapman states that it is their intention to carry on this hog work until they are able to ship a carload or two per week to the market. They have a few registered Berkshire and Duroc-Jersey sows to produce boars, but it is the purpose of the management to do away with these and buy their boars so that they can change the blood every other year.

At the present time they are running 1,700 head of steers and five or six thousand wethers. This stock will be disposed of as soon as they are ready for the market. It is the purpose of the ranch to run a native bunch of breeding cows and produce their own steers to eat the grass on the place.

PERMANGANATE FOR FOWLS.

What is the proper amount of potassium permanganate to use to the quart or gallon of water for my chickens, and how often should it be used?—W. F. B., Santa Barbara, Cal.

Answer by J. E. Dougherty.

Make a stock solution by adding one teacup full of commercial potassium permanganate to a two-quart Mason jar of water. Add more water as this concentrated stock solution is used up till all the crystals have been dissolved. Add two tablespoonfuls of the stock solution to each gallon of fresh drinking water given to the fowls.

THE HOLSTEIN SALE.

The first annual Holstein Friesian consignment sale, held at Hanford October 28, was all that the breeders and the dairy interests of the State could well ask. The stock consigned was of attractive merit and quality and dairymen from all parts of the State attended and bid well on the 94 animals consigned and sold. Prices ran as high as $1,000, two different animals being sold at that figure, a bull and a cow, the first being Prince Juliana De Kol, consigned by A. W. Morris and bought by Mrs G. S. Hewitt of Hardwick; the second, a 2-year-old heifer, Stratford Sozon De Kol 2nd, consigned by T. J. Gilkerson and purchased by J. G. Fakes of Patterson. Altogether 15 animals sold for $500 or better, two going at $900 and $950. The total amount received for the 94 head was $32,200, an average of $408.91 for the 78 females and $308 for the 16 males, all ages. Several Kings county breeders were conspicuous by their interest, nearly half of the animals sold going to Kings county buyers. W. H. Ginn of Corcoran was the largest purchaser, getting 12 cows, which averaged $500 each. The sale was conducted smoothly and with excellent success in every particular, Colonel Ben Rhoades being the auctioneer and J. A. McAllister Jr. sales manager. It was planned to make this the first of a series of annual consignment sales and all the leading Holstein breeders of California took an active interest in it. Its success makes future sales a practical certainty, to the benefit of the breed and to the dairy interests of the Coast.

D. O. Lively, chief of the department of live stock of the Panama-Pacific International Exposition, has spent a number of months in visiting the various live stock and herd record associations and larger State fairs and specialty shows and the completion of arrangements for an exhibit of the highest quality of animals that was ever shown on the Pacific Coast, if not in America. The results of his work are eminently satisfactory and will be shown in the exhibits of the department.

STOCK AT STEYBRAE FARM.

One of the Orchard and Farm's field men recently visited the Steybrae Stock Farm, the property of E. B. McFarland. While down there one of his very best imported Ayrshire cows, "May of Kelso," died. This is the cow that Mr. McFarland expected to show at the Panama-Pacific Exposition. She had never been put into the advanced Register, although her yearly milk record was far beyond the necessary requirements to put her there.

His new shipment of hogs have arrived and are looking well. The great young boar, Bandmaster II, junior champion of both Iowa and Minnesota, seems to have taken to his new quarters, and barring no accidents, he will be a hard nut to crack at San Francisco next year. Two of the sows have now farrowed so that any one looking for show stuff for next year would do well to visit this farm early. He has several young boars for sale, and might part with a few young gilts.

The Use Of Hercules Dynamite On Farm, Orchard and Ranch

The War Cuts Off Potash Supply. Use Hercules Dynamite.

EXPERTS figure that the supply in this country of potash available for use as fertilizer will last only three months longer at the normal rate of consumption.

In view of this condition the present is an excellent time to increase the fertility of your soil by the use of dynamite.

The excellent results obtained by subsoiling are almost too well known to need mention. Crops planted on subsoiled land invariably grow faster, yield more heavily—in fact, excel in all ways crops planted in land that has not been so treated.

Subsoiling loosens the earth to a depth never reached by a plow. It breaks up impervious lower strata, aids drainage, and gives crops new soil upon which to thrive.

If you have never tried subsoiling try it now. The method is simple and inexpensive. For full details write us for "Progressive Cultivation." It tells how, when and where to subsoil.

Blast Holes Now for Trees You Will Plant Next Spring.

EXPERIENCE has taught many farmers that the best method to follow in planting trees is to blast in the fall or early winter holes in which the young trees are planted in the spring.

The results obtained by this method are almost as superior to those given when a tree is planted in a freshly blasted hole, as planting in a blasted hole is to planting in one that has been dug with a spade.

Not only is the soil thoroughly broken up in a manner that gives the roots room for free natural growth, as is always the case when a hole is blasted instead of dug, but also it has time to "weather" thoroughly and thus be in even better condition to receive the tree.

If you are not thoroughly familiar with the advantages gained by using dynamite for tree planting, write today for "Progressive Cultivation." It contains valuable information on tree planting, subsoiling, stump and rock blasting, drainage work and other agricultural activities.

HERCULES POWDER COMPANY
Chronicle Building, San Francisco, Cal.

Please send me a free copy of your book, "Progressive Cultivation." I am interested in Dynamite for

Name

Address

The Kind of Hog Raising That Pays

Everybody says that there are fine opportunities in the hog business, but just the same California drags away behind in the number of hogs she raises. Probably the cholera is most to blame for that condition, then the methods that are ordinarily used. Whatever the reason, the actual number of hog ranches in operation is comparatively small.

Nevertheless hogs do pay well if they are raised right. J. W. Guiberson of Corcoran, one of the largest and best farmers in the southern San Joaquin valley, has 60 acres run solely as a hog ranch, which brings in a larger acre profit than any other ranch, or any other kind of farming conducted under his direction. The net returns are $50 per acre per year, after taxes, depreciation and all other expenses are subtracted from the total income. These results are due, first, to freedom from cholera; second,, to good methods.

The methods are those which any person on an irrigated alfalfa ranch could follow whether he kept one sow or fifty. The only difference is that some improvements could be made in feeding if a person could give it his time and attention. Furthermore, by taking a little better care of the land just as many hogs could be raised on a good forty as on this sixty, for there is not enough water to make it produce as heavily as it should and there is so much land of the J. W. Guiberson Company to be looked after and developed that it is found better to spread out the work over a greater acreage than would be best if labor was as abundant as is land.

The land on which the hogs are raised is part of a 320 acre ranch, irrigated from an artesian well, and so there is not the chance of bringing in cholera infection that there would be if it were irrigated from a canal. Likewise the country is rather sparsely settled and there is not the chance of infection from birds or otherwise which would be the case if there were many hog ranches around.

That gives an advantage when it comes to sanitation, but almost as good situations can be found all over California.

Barley and Alfalfa.

The essentials of the system are alfalfa pasture and ground barley. The former is fed all over California, the latter is not, but it is the thing that makes hog raising pay. It would be more profitable to make pork out of barley than to make beer. The barley is raised by J. W. Guiberson Company, and is charged up against the hog ranch at just the prices for which it could be sold in Corcoran, a couple of miles distant. In this way the hog ranch is in exactly the same position an individual would be in an alfalfa and grain district, who could buy direct from the barley grower. There is far more barley fed than is the rule on most ranches, but, after all, the alfalfa is the basis of the system.

Last year there were 35 brood sows kept. This year there are 47, with 3 boars, or a total of 50 breeding animals. The sows are put on alfalfa pasture, without grain, after weaning litters of pigs, and just before farrowing time they are put in pens. They are kept in pens only until their pigs are three weeks old or thereabouts and able to look after themselves in alfalfa pasture with a bunch of other pigs and sows, and, with that exception, the sows and the pigs are on alfalfa all the time until they go to the packer, though varying amounts of barley are fed most of the time to both sows and pigs.

The sows are mostly Poland Chinas. Two of the three boars are also Poland Chinas, the third is one of the prize winning Berkshires purchased at the last State fair.

Equipment.

Like most profitable places, equipment is of the simplest kind and not much money has been put into anything but stock. The farrowing pens are floored in front, so that they can be kept clean and dry. The back part of the pens are dirt, sheltered by a frame on which is piled coarse alfalfa hay to provide shade in summer and protection from rain in winter. This hay is taken off and burned once a year and the pens disinfected. Similar protection from sun and rain is provided in every field, and provides the leading features of equipment for the ranch. One man does all the work on the place.

Financial Features.

The sows give two litters a year and bring to marketing age an average of a little less than seven pigs to the litter. These are marketed at about eight months, weighing 200 pounds, As some are farrowed earlier than others, and as it is the rule to hold for a good market, or sell earlier than usual if the market seems particularly favorable, there is no definite age or weight at which they are sold. Counting 47 sows and 13 pigs to the year, or 6½ instead of 7 pigs to the litter, two litters a year, there are two bunches of 300 pigs sold, or 600 pigs a year. These average 200 pounds each, or 120,000 pounds of pork on the hoof. At eight cents a pound, the gross receipts are $9,600 from the 60 acres.

They are fed approximately 2,600 sacks of barley a year, which, at $1 per sack, more than prices this fall, amounts to $2,600. The only other big expense is that of the man, or $1,000. Then there are incidental expenses, for electricity for pumping, taxes, and the various odds and ends, but the one man does the work and the alfalfa provides all feed except the barley.

The figures apply definitely to the ranch, but are given as estimates, owing to a changing number of sows kept, different sizes of marketing the hogs, varying pork prices, and so on. Last year the average was greater than the basis of figuring, or seven pigs per litter, but this year it will probably be a little less, owing to the partial loss of several of the first litters of pigs coming this spring. With good feeding and care the sows farrow large litters and the loss of pigs is small.

The Course of Life.

A pig's life is run off in several different stages. The first period is in the pen with his dam. There he stays for about three weeks, during which time the sow is fed ground barley and a little alfalfa hay, but mostly barley. As she is in fine condition when she comes off the alfalfa, the barley is all that is needed to keep her up for the few weeks and to supply plenty of milk for the pigs. At the end of several weeks the pigs are old enough to keep from getting mixed up with other litters when they are moved into an alfalfa field, and are big enough to look after themselves when put with pigs somewhat larger.

They go from the pen to a 5-acre field of alfalfa, of which there are four on the ranch, and two 20-acre fields. Litters of about the same age are put in the same pasture, so that pigs of about a size will be together. The pigs learn to eat alfalfa, grow quite a bit and get a good start, and in three weeks or a month are put into one of the 20-acre fields with all of the sows and all of the litters of the season. In the 5-acre fields a little barley is fed. They are about two months old when turned into the 20-acre field.

The sows stay in the 20-acre field with them for a few weeks, and then they are taken away and put back alone on alfalfa pasture to rest up for the next litter. They are bred twice a year, the farrowing starting in February and September, some sows naturally coming in six weeks or so later than others.

In the 20-acre fields the pigs are kept for about three months, after weaning, or until they are about six months old and ready for fattening. Alfalfa, the finest growing food there is, makes practically all their feed during this time, but a little barley is also fed to make them do still better. The only way this can be fed, so that all will have an even chance, big and little, is to scatter it over the field and let them gather it up. In this case whole barley is fed. Other times rolled barley, crushed on the place, is given.

Then when they are about right to prepare for the butcher, they are taken to another field, in which there is all the alfalfa pasture and all the

DUNHAM-McLAUGHLIN COMPANY
OAKLAND, CAL. WAYNE, ILL.

PERCHERONS

At the GREAT CALIFORNIA STATE FAIR last month we WON every FIRST PRIZE competed for; also won CHAMPIONSHIP FOR BEST STALLION any age; also Premier Honors for the best group of five stallions any age.

The unprecedented success of our business is due to the extraordinary quality of our stock; careful, conservative management and perfect fulfillment of our obligations.

STABLES: EMERYVILLE RACE TRACK
OAKLAND, CAL.

DUNHAM-McLAUGHLIN CO.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of August 24, 1912, of

ORCHARD AND FARM

published monthly at San Francisco, California, for October 1, 1914.
Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Managing Editor, D. J. Whitney, 1406 Hawthorne Terrace, Berkeley, Cal. Business Manager, D. W. Hill, 1233 Arguello Boulevard, San Francisco, Cal. Publisher, Country Life Publishing Company, San Francisco. Owner, Examiner Printing Company, Hearst Building, San Francisco, Cal. Hartley F. Peart, Attorney-Trustee, Humboldt Bank Building, San Francisco. William Randolph Hearst, New York, N. Y., beneficiary. Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities. NONE.

D. W. HILL.

Sworn and subscribed before me this 23d day of September, 1914.
(Seal) A. J. HENRY,
Notary Public in and for the City and County of San Francisco, State of California, 656 Market street.

QUALITY
BERKSHIRES

OUR BERKSHIRES ARE NOW BETTER THAN EVER.

They are bred right, fed right and priced right. We have all the prominent blood lines, and always have four to six herd boars in use. Try us the next time you want Berkshires.

Send for Catalog.

Oak Grove Dairy Farm
WOODLAND, CALIFORNIA.

BLACK LEG

LOSSES SURELY PREVENTED by Cutter's Blackleg Pills. Low-priced, fresh, reliable; preferred by Western stockmen, because they protect where other vaccines fail. Write for booklet and testimonials.
10-dose pkge. Blackleg Pills $1.00
50-dose pkge. Blackleg Pills 4.00
Cutter's Blackleg Pill Injector 1.50
Discounts: 250 doses, 10 p. ct. 500 doses, 20 p. ct.
Use any injector, but Cutter's simplest and strongest.
Every package dated, unused pills exchangeable for fresh after date on package. Do not use old vaccine (our or any other), as it affords less protection than fresh.
Insist on Cutter's. If unobtainable, order direct. Send check or M. O., we pay charges and ship promptly.
THE CUTTER LABORATORY, Berkeley, California.

ground barley they can eat. The barley is fed in a self-feeder. They will eat approximately seven pounds a day, together with more or less alfalfa.

The length of time they stay here varies with the condition of the market, as once they are about in shape they are sold when the market looks best. Roughly speaking, the fattening period lasts about two months, and the weight at marketing time is 200 pounds. The plan is to rush them along to an early market, rather than to keep them several months later and run so much more risk of disease and all the other dangers to which hog flesh is heir, while the total amount of food a hog will consume in attaining a given weight in eight months is less than the weight needed in attaining the same weight with long delay. The fact of $50 per acre net profit a year is probably the best argument in favor of the system. One reason for lack of disease is the frequent moving from field to field.

Another System.

There is one other system of raising hogs which Mr. Guiberson is carrying into effect which is working finely and goes under entirely different conditions from this. It is a combination of beef and pork production. This ranch is a number of miles away from the 60-acre ranch, in more of a grain farming country.

By the side of a water course there is some fine pasture for stock. Next there is a field of moderately heavy soil, for that section of the country, which makes good barley land. Still farther from the river is some land planted last spring to alfalfa. This latter is the only part that is irrigated.

A fine bunch of Shorthorn heifers, some practically pure bred, but not registered, and all of fine quality, was bought last year, with a number of steers of the same age. The stock then has the natural pasture near the river in the spring, and when the ground dries up and the feed is about gone, they have barley pasture which a bunch of pigs has hogged off. Then there is the alfalfa to supply feed when necessary. It is not making the highest kind of acre profit, but the plan has worked out excellently this year, and will do better with the alfalfa irrigated and well established, instead of just started.

The profitable feature comes in hogging off the barley. It may look wasteful, but it is not on account of the saving in expense of harvesting and handling, and on account of the fact that the cattle which come on after the hogs have fattened off the the barley find fine pasture. Hogging off barley is a fine plan too little practiced in California.

It actually takes half the barley to pay for the threshing if barley is very cheap, as it was this year. Granting that hogs waste some, they do not come within a mile of wasting half the barley, for there is very little left after the pigs nose around all they want to over the field and after the cattle pick up all the feed they care for. If it pays to buy barley to feed, it more than pays to feed the standing barley and then get a lot of good from the field for beef stock. Meanwhile, the field is fertilized by cattle and hogs. The alfalfa supplements both barley and natural pasture and keeps cattle and hogs well fed at all times.

Other Methods.

Mention was made that still better results could be secured with hogs than are secured on the 60-acre ranch. This has been proven. The Guiberson Company runs a number of dairies, and has been in the habit of taking pigs from the ranch to supply the dairies with pigs, and almost invariably pigs with plenty of skim milk did better than those with barley alone. So a dairyman who would follow these methods, but use some skim milk where it would do the most good, naturally could do better than is done with barley and alfalfa alone. A variety of feeds is better than a single feed, or two feeds, so that Egyptian corn or milo maize, ground as all corn should be when fed with barley to hogs, would be an improvement over barley alone, and pumpkins or pie melons would be just so much better. The facts simply show very good profits even when some opportunities are overlooked, by methods practicable, whether a man has one sow or fifty.

UDDER DEVELOPMENT.

When it comes to the show ring a great deal depends upon the symmetry of the udder and its general development. For simple dairying also a cow with a well-balanced udder is better liked than one with a large udder behind and a small udder in front. With a fault like this a great deal can often be done by the method of milking.

The quickest and best way to develop the fore part of the udder seems to be by keeping on milking the two front teats longer than the hind teats when the cow is being dried. The development of a quarter largely depends upon the amount it is used, and when the hind teats are not used, the rear part of the udder naturally shrinks in size, while the front quarters, being used, retain their size and a better balance is made between front and rear. This is done very naturally at the end of the lactation period and by milking two weeks longer in front than behind quite a change can be made in the shape of the udder when the cow freshens again.

In ordinary times the fore part of the udder can be developed somewhat by milking the front teats out about half, then milking out the hind teats entirely and returning to the front teats again to finish milking, but the most effective method for developing the front of the udder to give it a better balance with the hind part is to keep milking the front teats about ten days or two weeks after stopping milking the rear teats.

FIELD PEAS FOR HOGS.

A crop grown in some parts of the country for hog feed, but practically ignored in California, is Canada field peas. This is a crop decidedly worth trying. Canada field peas are grown here to a greater or less extent, it is true, but as a green manuring crop, in orchards, to plow under in the spring for humus, and for this purpose they are excellent. The peas make a fine winter growth and produce well. They could just as well be grown for feed as for plowing under.

Peas are known in every pork producing section where they are grown as a very fine fattening food, putting an excellent finish on a hog, being on a par with corn for this purpose. At the same time they are excellent nitrogen gatherers and enrich and refresh the soil. This is true whether they are plowed under or fed off on the ground.

The plan is to let the vines reach maturity and ripen the pods, then to turn the hogs in to do their own harvesting. They eat both vines and pods and waste very little, getting a great amount of food and leaving the ground far richer when they are through with it than it was before the peas were planted. Pork always sells well, and pea-fed hogs make more than ordinarily fine pork. The labor and other expense of raising the crop and putting it into the hogs is small, and it offers a fine opportunity for helping land which is merely grain farmed, or handled in such a way as to decrease rather than increase its fertility.

When putting the collar on a horse part the mane carefully.

The Wrong Oil Ruins Your Separator

To lubricate your separator with ordinary or general utility oil is one of the quickest ways of sending it to the junk pile. You need a special oil for the finely adjusted mechanism of this delicate farm machine.

Standard Hand Separator Oil

is made especially for cream separators—and for that reason it will most satisfactorily lubricate your separator. It keeps the bowl spinning smoothly and enables you to get *all* the cream. It doesn't "gum." Saves repair expense. Lengthens the life of your separator. Ask your dealer for Standard Hand Separator Oil.

Standard Oil Company
(California)

STEY BRAE STOCK FARM

FOREST GROVE LAUREL 2ND

BERKSHIRE HOGS

My individual herd of Berkshires are headed by Bandmaster 2d, Junior Champion—Iowa and Minnesota State Fairs 1914.

The females were first prize winners at Wisconsin, Iowa and Minnesota State Fairs. They comprise the blood of Black Robin Hood, Masterpiece, Berryton Duke and Rivalo, Champion's Best (Grand Champion of America 2 years ago). Three of my sows are daughters of the America's Grand Champion last year. Prices very reasonable when quality is considered.

For particulars and prices, address **W. M. Carruthers, 721 Hearst Bldg., S. F., or E. B. McFarland, San Mateo, California.**

HOWARD CATTLE COMPANY
Breeders and Importers of
SHORT-HORN CATTLE
55 New Montgomery Street San Francisco

GEORGE D. HARRAH
NEWTON, IOWA
BREEDER OF
HEREFORD AND SHORTHORN CATTLE

BREEDER OF CHEVIOT SHEEP
GEORGE PARNELL WINGATE, INDIANA

Insects and Diseases of the Season

—By E. J. Vosler, Secretary State Commission of Horticulture.—

Each month Mr. Vosler tells of one or more of the important insect pests or diseases needing control in the month or season for which the article was written. By following the advice given herein, writing for more information, if desired, the right methods of controlling insect pests and diseases can be used.

European Fruit Scale.

The brown apricot scale, or European fruit scale, as it is often called, is common throughout the deciduous fruit growing sections of California. Its favorite hosts are the prune, plum, apricot, almond and pear.

The adults of this scale are from ⅛ inch to 3-16 inch in length, about ⅛ inch high, yellowish brown in color, sometimes marked with black. The older scales are shiny, convex and oval.

In the early spring one will find the under sides of limbs and twigs thickly encrusted with this scale. It is at this time that they begin to develop into the adult form, after which they soon begin to deposit large numbers of eggs. The young scales emerge, settle on the leaves and begin to suck out the sap. They excrete a sticky substance, known as honey dew. This honey dew, on old infested trees, covers the foliage, fruit and twigs, and furnishes a medium for the black smut fungus to work in. This honey dew also collects large quantities of dust, resulting in the impairing of the leaf functions, and therefore the entire tree suffers. Honey dew covered fruit is unfit for use.

Bulletin No. 80, part VIII, of the Bureau of Entomology, U. S. Department of Agriculture, by P. R. Jones, contains the following summary of control methods:

"Distillate oil emulsion at 5 per cent and 6 per cent strength, with and without caustic soda; crude oil emulsion at 12 per cent strength, and resin soda wash are effective in controlling the European fruit Lecanium and in cleaning up the trees from lichens, and do not injure the trees when applied as a winter treatment.

"Distillate oil emulsion at 5 per cent and 6 per cent strengths, with and without caustic soda; distillate oil at 6 per cent strength (mechanical mixture); and crude oil emulsion at 12 per cent strength are effective in controlling the European pear scale, destroy the lichens, and do not injure the trees when applied as a winter treatment.

"Caustic soda and creosote oil emulsion sprays control both of these scales and destroy the lichens, but are injurious to the tree.

"Lime-sulphur and borax sprays are not so efficient in controlling these scales, especially the European fruit Lecanium, as are the distillate oil and crude oil emulsions, and borax acts on the trees in the same way as does caustic soda.

"Distillate oil and crude oil emulsions appear to have distinct fungicidal properties aside from their insecticidal value.

Distillate oil emulsions, at 6 per cent strength, and crude oil emulsion, at 12 per cent strength, measured by their efficiency against scales and lichens, convenience of preparation and application, and cost, are the sprays best adapted for the European fruit Lecanium and the European pear scale.

"The 6 per cent distillate oil emulsion will cost about 2½ cents for each prune tree and 3½ cents for each apricot tree.

"The 12 per cent crude oil emulsion will cost about 2 cents for each prune tree and 2½ cents for each apricot tree.

"All sprays, to insure the best results, should be applied with a power outfit at a high pressure (180 to 200 pounds). A coarse, drenching spray, applied with crook nozzles, is preferable, and February is the best month in which to spray."

The formula for the crude oil and the distillate emulsions, as given in "Injurious and Beneficial Insects of California," by E. O. Essig, are as follows:

CRUDE OIL EMULSION.

Water	175 gallons
Liquid soap	3 gallons
Crude oil	25 gallons

Fill the spray tank with the water, add the liquid soap, agitate thoroughly, after which add the crude oil. If the liquid soap cannot be obtained, use whale oil soap, 20 pounds dissolved in 10 gallons of hot water, to which 3 pounds of caustic soda is added.

DISTILLATE EMULSION.

Distillate, 28% Baume	20 gallons
Whale oil soap	30 pounds
Water	12 gallons

Dissolve the whale oil soap in hot water, add the distillate, agitate thoroughly while the solution is warm. For use add 12 gallons of water to each gallon of the above mixture.

To destroy mites or lichens on fruit trees, add 2 pounds of lye to the formula of the stock solution.

The prepared crude oil and distillate emulsions can be obtained from several insecticide dealers throughout the State.

OLIVE OIL IN TINS.

TO ORCHARD AND FARM—I wish that in some future issue of your most interesting magazine you would ask the bottlers of the pure olive oil why they do not put it on the market in tins as well as in bottles. I find that the foreign oils taste much better in the tin, where no ray of light can enter and am sure I could use much more California oil if it were in tin instead of glass.—Mrs. D. C. M., Oakland, California.

California olive oil is put up in tins, occasionally at least, for two years ago we purchased from certain olive oil plant several gallons of same, and by the same token a case or so of ripe pickled olives, neighbors sharing part of both expense and olives. The reason more is not put up in tins is that the American people would sooner have a product which looks attractive, even though they have to pay a stiff price for it, than one which is better and less expensive. They would sooner buy pretty oil in glass bottles, where, we suppose, the light causes some deterioration, than as good or better oil in tins at a lower price. As you say, also, more would be used in tins also, thus increasing a demand for a fine product and lowering the cost of living. Similar conditions exist with practically all of our food stuffs, our wearing apparel and other things we use. We believe you can find California oil in tins if you go after it, and the more who go after it the more oil will be put up in this way.

CROP YIELDS IN U. S.

The U. S. Department of Agriculture crop report for November 1, 1914, gives California apricots as 80 per cent of a full crop; prunes, 78 per cent; almonds, 85 per cent; walnuts, 85 per cent; olives, 88 per cent; walnuts, 78 per cent. All of these are greater than the crops of the previous year, though the walnut crop is almost the same, according to these figures, and in most of them the crops are said to correspond closely in size to those of 1912.

Woman is man's better half because she is the half that helps to make man better.

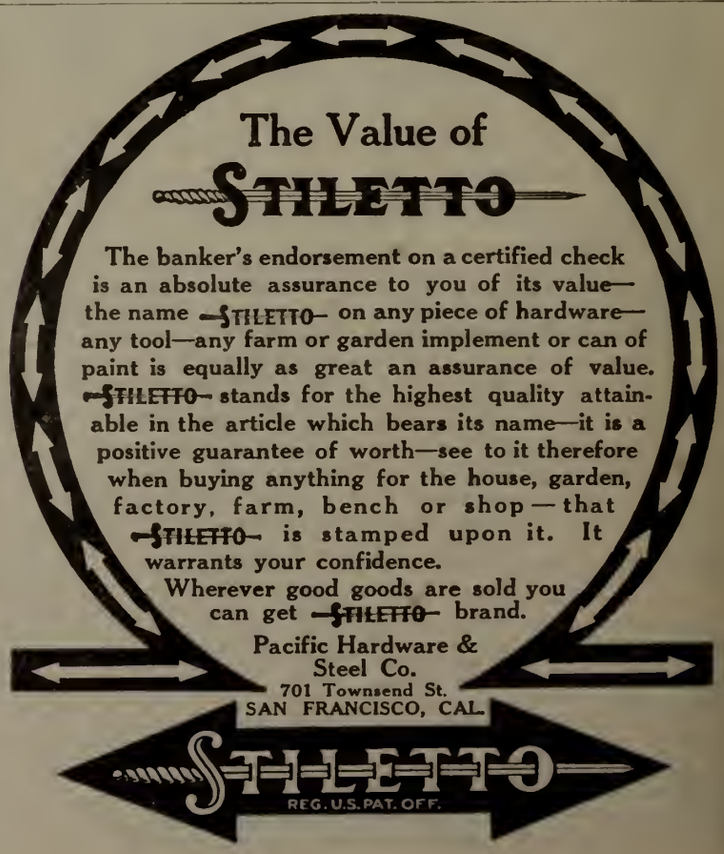
California Cow World's Best Milker

A new world's milk record has come to California through Tillie Alcartra, who has just finished an official test of the Holstein-Friesian Association with 30,452.6 pounds of milk and 951.308 pounds of butter fat to her credit in 365 days, being the third of the cows of A. W. Morris and Sons, Woodland, to make a world's milk record. Only six cows in the world have made as good as 28,000 pounds of milk in a year, and of these Morris owns, or owned, three.

"Tillie Alcartra," World's Record Milk Producer—30,452.6 lbs. Milk, 951.308 lbs. Fat, In 365 Days.

First was Aralia De Kol, who in 1912 astonished the dairy world by producing in one year 28,090 pounds of milk. She was then 12 years old and something over a month ago she died of milk fever, leaving a heifer calf who is a granddaughter of the other great cow, Riverside Sadie De Kol Burke, who followed Aralia with 28,826.8 pounds of milk in a year, both cows producing enough fat to make well above 1,000 pounds of butter.

Tilly Alcartra was brought to Yolo county when a small calf and is a daughter of the famous Alcartra Polkadot Corrector. Tillie Alcartra traces through both sire and dam to De Kol Burke, the sire of Riverside Sadie De Kol Burke, so comes by her milking capacity very naturally. From the time she dropped her first calf she has proved a great producer, her special feature being consistent and uniform production, as she milks heavily all through her lactation period. At the present time, several weeks after the close of the record, she is milking 64 pounds per day and showns no sign of slowing up. The illustration shows a cow of beautiful dairy type, an udder much smaller than is frequently seen, but of excellent form and proportion, and very highly developed milk veins that indicate a very heavy milk production.



Facts About Foot and Mouth Disease

The recent outbreak of the foot-and-mouth disease in Eastern States is something of extreme interest to every owner of livestock and of the greatest importance to the country at large. Regarding it Dr. Charles Keane, State Veterinarian, writes as follows:

Foot-and-mouth disease is a specific infectious communicable disease of cattle, sheep, swine and other ruminants and poultry. Horses and dogs, which at times become affected, are more resistant.

The period of incubation as a rule is very short. Ordinarily it is two or three days and, exceptionally, up to two weeks.

While we know the disease is highly infectious as it presents all the characteristics of an infection, the specific causative agent has not been determined. We know the virus is ultra-microscopic and filterable.

Symptoms.

It is ushered in with rise of body temperature (fever), followed very shortly by the appearance of reddened areas; (emythema) on the mucous membrane of the mouth, tongue, gums and lips and of the skin in the clefts between the digits (feet). Soreness and lameness soon become evident as well as soreness in the mouth evidenced by difficult mastication and slobbering. These reddened areas in the region of the mouth and feet are followed by vesicular eruptions. These vesicals (bladders), varying in size from a millet seed to a marble and containing a serus fluid, soon rupture and leave raw patches. On the appearance of vesicular eruptions the internal temperature subsides. These eruptions may also appear on the skin and other parts of the body, especially the udders of cattle. The symptoms, of course, depend upon the resistance of the animal affected and the virulence of the disease. The fatalities, except in the malignant form, when you have gastro intestinal symptoms, are very light, rarely more than one per cent of the affected animals dying. However, the chief damage is due to the fact that the animals affected rapidly lose condition and recovery is oft times protracted.

The disease ordinarily ends in recovery as mentioned above, but many animals after recovery are apparently capable of transmitting infection for quite long periods.

In several small outbreaks that have occurred in the United States during the past twenty years sanitary authorities have found it cheaper in the long run to destroy all affected animals. In addition to this the usual methods of cleaning and disinfecting have been carried out. This is the procedure that is being adopted in the present outbreak by the authorities, both federal and state, in the various eastern and western states at present involved.

While the slaughter method of eradication can be adopted where the outbreak is limited, such method would be out of the question if the disease gets beyond control. No successful biological or medicinal preventive for this disease has been discovered.

Action in California.

The Governor of this State has made proclamation with relation to the importation of animals re this disease and I might state that in the enforcement of same no animals are permitted to get into California from any of the infected states in the East or Middle West or from any state bordering on any of the infected states. Railroad cars coming into California from any part of the United States, whether carrying live stock or merchandise, must be first cleaned and disinfected. — CHARLES KEANE, State Veterinarian.

From a reliable source we have information stating that foot-and-mouth disease was brought to this country through an importation of hides from the Argentine Republic. The germ must have been carried with these hides and when they were opened up at the Michigan tannery it spread from there.

Regarding the information which has been sent out pertaining to the National Dairy Show Exhibit which was quarantined at Chicago after the foot-and-mouth disease broke out in the East, would say that there are now sixty-four cases of infection, some so slight that it requires a minute examination to detect it. Many of the animals are recovering. Not an animal in the lot has died or been killed on account of the disease. None of the animals have stopped feeding more than forty-eight hours, and some of them only twenty-four hours. Very little trouble is found in the feet and that only in the heavier stock. They are quarantined completely and their helpers are locked up with them, and their quarters are almost reeking with disinfectant. They have not been segregated. The Federal and State Veterinarians, and Judge Hughes, head of the Chicago Veterinary College, are the only ones in and out of the building, and they go in with disinfected clothes. It is not expected that one of the animals will die.

John Clay, perhaps the best informed man on foot-and-mouth disease in this country, says:

"When I was farming in Scotland, so many years ago that I hate to think of it, we had foot-and-mouth disease almost continuously in Great Britain; in fact, it was so common that we paid little attention to it except it got in among our milk cows or attacked a band of ewes at lambing time. Then the results were serious. At other times, while it was more or less of a loss, we bore it quietly. Like influenza in the human, it often leaves an aftermath and it is particularly severe on highly bred cattle. But as a matter of fact, in many years' contact with it amid ordinary farm stock, I never recollect losing an animal except a few lambs when, unfortunately, our ewes became infected just prior to the lambing season."

ORCHARD AND FARM has received under the signature of John F. Ferguson, secretary of the U. S. Livestock Sanitary Association, the following from the different States regarding foot-and-mouth disease:

Illinois.

All infected herds and all exposed cattle have been quarantined and the situation is well in hand. All shipments within the State will be made in accordance with Regulation 6, which provides for the movement of cattle, sheep and hogs under affidavit by the owner to the effect that the animals are not afflicted with, or have been exposed to, the contagion of foot-and-mouth disease. All shipments to public stock yards must be made in clean and disinfected cars for immediate slaughter.

Indiana.

In eleven counties positive cases, five others report suspicious diagnosis not confirmed. Original counties believed to be clean and two others also. Canvass by State men shows no new centers to-day, several shipments to re-examine.

Iowa.

Outbreak well in hand. Positive diagnosis two herds Iowa County, one herd Jones County, one herd Howard County, held for examination. Final diagnosis in Clinton County to-morrow. All direct and secondary exposures held in quarantine, also railroad yards, all stock cars held for cleaning and disinfection. Quarantine on disease promises very rigid. Believe Iowa will escape with only few centers infection.

Kansas.

Careful inquiry over State for past forty-eight hours finds no indication of foot-and-mouth disease. State clear of said disease up to 5 p. m. November 11, 1914.

Minnesota.

Three cars exposed cattle unloaded transfer shipped west on reaching Glendive found diseased. Fed at Mandan and Glendive. All yards quarantined. Ten shipments settlers' stock exposed at transfer. These quarantined. No developments yet. Transportation companies disinfecting all cars. Situation so far favorable.

Later reports from the East state that the disease is well in hand and will finally be eradicated.

The Grape Growers' Protective League has started a vigorous campaign to make a separation of the wine industry and the saloon and distilling interests of California, feeling that the interests of the two are divergent, though confused in public mind, and that the wine industry is in danger of being severely punished for the sins of the saloon. The league asks for laws distinguishing between the sale of vinous and distilled or malted liquors, limiting the number of saloons in proportion to population, having licenses issued to property rather than to individuals, demanding midnight and Sunday closing, preventing treating and otherwise securing the proper regulation of the saloon.

A BIG GUERNSEY SHOW.

The American Guernsey Cattle Club has appropriated a total of $10,500 to be used in maintaining a view herd in the department of live stock of the Panama-Pacific International Exposition and in supplemental premiums. While the number of Guernsey cattle in America is less than that of some other dairy breeds, this beautiful island breed is rapidly becoming generally popular and great interest is manifested in its capabilities in the States of the Pacific Coast, where it is possible to raise, feed and maintain dairy animals cheaper than in any other section. The enterprise exhibited by the Guernsey Cattle Club in thus advancing the interests of their breed will undoubtedly be fully rewarded.

The fast man frequently does not get there first.

Olive Trees

Olives worked on Picholine Root have stronger growing and deeper feeding root systems than those grown from cuttings.

Our Olives are worked on Picholine Seedlings, the wood being cut from trees having a record for productiveness and size of fruit.

They are prize winners—the kind you want. Write *Us* FIRST.

The Silvia - Bergtholdt Co.
"Fruit Tree Specialists"
P. O. Box F Newcastle, Calif.

ATTENTION!
HOMESEEKERS AND INVESTORS

INVESTIGATE

The Opportunities for the Homeseeker and Business Man in the New Territory Along the

WESTERN PACIFIC RAILWAY

—IN—

CALIFORNIA, NEVADA, UTAH

1,500,000
ACRES OF GOOD
IMPROVED AND UNIMPROVED LANDS
AWAITING SETTLEMENT

WRITE FOR A FREE COPY OF OUR
"HOMESEEKERS" and "OPPORTUNITIES"
LISTING AND EXPLICITLY DESCRIBING OPPORTUNITIES IN THIS NEW COUNTRY

WESTERN PACIFIC RY.

BODE K. SMITH
ASST. GENERAL PASSENGER AGENT
MILLS BUILDING SAN FRANCISCO

Hens Profitable Several Seasons

The standard method of operating poultry ranches in California is usually to keep the hens for two seasons, then to send them to the market. The first year (so we all have said) the pullets lay more than the older hens, but the eggs are smaller. The second year the eggs are larger, but there are fewer of them and after that the hens lay so few eggs that it does not pay to keep them. Now comes the Utah Agricultural Experiment Station with a bulletin which seems to prove that this idea is all wrong and they appear to have the proof to back it up.

The thing is worth while, too, for here is what the bulletin says: "One of the biggest drawbacks to success in the poultry industry is the problem of renewing the flock. With most strains of fowls the average life of usefulness is considered to be about two years. Under these conditions 50 per cent of the fowls must be replaced every year. A flock of 2,000 hens would thus require 1,000 good pullets added each year. This would mean an average of 4,000 chicks, one-half of which would be lost in brooding of culled out, and at least one-half of those left would be cockerels, which are too often raised at a loss. The fact that most egg producers would be glad to buy pullets at the price they receive for the cockerels is a confession that it costs more to produce them to the broiler age than they will bring.

"Leghorn chicks can usually be bought in large numbers at ten cents each; with 50 per cent loss or culled out the original cost per chick would be twenty cents. The feed cost would run from thirty cents to forty cents, making the total cost of producing a pullet, outside of equipment and labor, fifty to sixty cents.

"The equipment for brooding chicks in such large numbers is an expensive item, and can only be used for a short time each season. The labor problem is also acute at this time. While the sale of the old stock may possibly balance the cost of these two items, still the annoyance and uncertainty of the whole process is one of the most discouraging factors in poultry production to-day."

What Was Done.

Without further discussion it goes without saying that if it could be found possible to keep hens three and four seasons instead of only two and at the same time get practically as good results in egg production, it would be a fine thing for the industry. The experiments by the Utah Station were to see how long good laying hens would continue to lay well.

Chicks were hatched and raised from a flock of White Leghorns started in 1907 and it was soon found that nearly three-fourths of the first flock had made better records the second year than they did the first and that there was a great variation in the two years' records of individual hens.

At first no record was kept of the parentage of the individual chicks hatched and the flocks were composed of fowls bred from both good and poor producers, but later on a record was kept of the individual fowls, both as to the number of eggs each would lay during the year, and the egg record of the mother. If a person wants to go into detail on the subject, the bulletin is available, but only the summary can be given here.

Summary of Results.

Here are some of the facts given in a summary of the bulletin.

Some of the conclusions reached in studying the results of this experiment are startling and somewhat revolutionary in character. They are, however, consistenly supported by the records of the different flocks.

The average productive life of this strain of fowls appears at the present time to be about four years.

The average first year production of all flocks was 124 eggs. The average second year production was exactly the same as the first (which makes it look as if the idea of pullets laying best was wrong), while the average of the third year was only one dozen less.

The normal variation in first year flock averages of this strain of fowls is apparently between 100 and 160 eggs, the second year between 105 and 140, and the third year between 100 and 130. After that the average for all ages has been very close to 90 eggs per year.

The total production of a flock for the first three years appears to be the same regardless of whether the first year record was extremely high, extremely low, or medium in amount.

Nearly all of the longer lived hens of a flock will lay over 500 eggs; the majority of them will lay over 600 or 700, while individual records running from 800 up to nearly 1,000 eggs may be expected.

In the flocks making low first year records the second and third year records were high and there was little difference in production in these two years between the high layers and the low layers of the first year.

More hens have made their highest year's record after the first year than during that year. Three hens made their highest record the fifth year.

Nearly all the hens in these flocks whose total production has been extremely high have made low or only medium first year records.

From these studies it appears that the three year average is the most reliable index of the value of a given individual.

The other conclusions stated in the bulletin would only mix a person up on details unless he read the bulletin. The important facts to be noted are that the productive life of fowls of good vitality is at least a year longer than has usually been figured and often longer than that.

THE SANTA ROSA POULTRY ASSOCIATION.

The Santa Rosa Poultry Association and Egg Exchange has the distinction of being one of the least known organizations of poultrymen along commercial lines in California, and yet the oldest and one of the most successful. It also has the distinction of having developed and retained a large, growing and very successful trade in carton eggs while poultrymen throughout California were wondering whether or not it were possible to do such a thing.

The manager and the founder of the Santa Rosa Poultry Association is J. J. Fitzgerald, who something over a decade ago started in poultry raising near Santa Rosa without having any previous experience in the business. His worry soon became to be how to sell the eggs than how to make the hens lay them, and he tried to get some of the neighbors together to market their own eggs and buy their own feed.

The association was first started twelve years ago and was more successful in selling eggs and buying feed than in getting members to back it and several years ago it was reorganized on a share basis. Shares were $1.00 each, owners of a certain amount of stock being permitted to share in the profits in proportion to the amount of business done, there being no dividends, earnings other than that divided among members being applied on improvements in equipment.

The association owns a large warehouse near the [illegible] and in two years has done a business of $330,782 in feed and $477,057 in eggs.

The eggs are bought at a fixed price each day, depending on the market. The same price is paid for eggs of members and non-members, except that members participate in the profits. Feed is purchased at wholesale rates and resold at a moderate advance.

The most important feature of the work of the association is the trade in carton eggs. Eggs are sold in ordinary cases, packed in the usual way, or packed in cartons. There is a little extra cost for the cartons, but no more labor in candling and packing, and the extra cost of the cartons is so small that eggs can be sold at the usual price and the little extra cost of packing charged up against advertising or good will. In order to make a reputation for carton eggs, only eggs of the highest quality are packed in cartons and as a result there is a big demand for them, approximately 300 or 400 cases being shipped per week.

The demand for the carton eggs has extended much farther than would be the case with eggs packed in the ordinary way, eggs being sold as far distant as Oregon, Nevada and Arizona.

No eggs are put in cold storage. Ordinarily the demand is sufficient to take all of the eggs produced by patrons, but in the spring and early summer, when shipments are heavy, some are sold to packing companies.

The association has been able to supply feed cheaper than would have been the case with things on the old basis and it has made retailers lower their prices also. It has also made the egg speculators come up in their prices, so helped both ways. And a point of note at this time, by developing a good carton trade, it has put carton selling on an excellent basis.

THE FARM BOY'S CREED.

"I believe that the country which God made is more beautiful than the city which man made; that life out of doors and in touch with the earth is the natural life of man. I believe that work with nature is more inspiring than work with the most intricate machinery. I believe that the dignity of labor depends not on what you do but how you do it; that opportunity comes to a boy on the farm as often as to the boy in the city; that life is larger and freer and happier on the farm than in the town; that my success depends not upon my location, but upon myself; not upon my dreams, but upon what I actually do; not upon luck, but upon pluck. I believe in working when you work, and in playing when you play, and in giving and demanding a square deal in every act of life."

The collar of a horse should fit so perfectly that there is little wear or friction on the top of the neck.

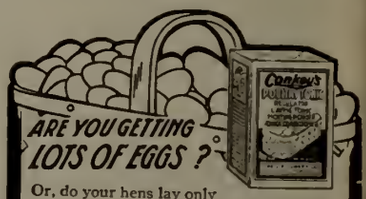
An Appetizing Food for Poultry, Dairy Cows & Hogs

Made From Selected Cocoanuts By Our Improved Process

Makes hens lay more eggs,
Increases butter fat in milk,
Makes hogs fat with clean flesh.

Free Sample and a copy of our booklet containing valuable information on the subject of "Successful Feeding" sent gladly on request. Write today.

Address Department C
PACIFIC OIL & LEAD WORKS
Manufacturers
155 Townsend Street San Francisco, Cal.



ARE YOU GETTING LOTS OF EGGS?

Or, do your hens lay only when eggs are cheap?
Get the eggs this winter by starting to feed

CONKEY'S POULTRY TONIC

now. It doesn't force the hens but makes them want to lay because they are well nourished and strong.

Conkey's Poultry Tonic is an all round tonic that helps nature do its work.—For this reason it is fine for every bird you own—young chicks, growing stock, molting fowls or laying hens.

Tell your Dealer you must have Conkey's—and write us if he cannot supply you. Remember, Money back if a Conkey Remedy or Tonic ever fails to satisfy you.

GET THIS BOOK—and learn to laugh at poultry diseases. It will make you an expert. Send 10c for a copy and we will enclose our Cash Value Coupon—something new.

THE G. E. CONKEY COMPANY
102 Conkey Bldg., Cleveland, O.

Just Like the Heat Under Mother Hen

Why X-Ray Makes Big Hatches

That's the kind of heat the X-Ray Incubator uses. *Natural moist radiation just like mother hen's.* X-Ray heating system is different from any other. Covered by patents. No other machine has it—nor can they use it.

Radiator Vapor Generator

The New X-Ray has the greatest invention we have ever made in incubator science. It insures you against dead-in-shell chicks. Makes strong, lusty chicks *that live.* Get the facts. New X-Ray catalog, finest we have published, illustrates and describes fifteen exclusive special features. Write for book No. 60—it's Free! Get our low direct-to-you factory prices freight prepaid. Brooders, too. No agents. Address

X-RAY INCUBATOR CO.,
Des Moines, Iowa

HOPLAND STOCK FARM

Registered Shorthorns, Shropshire Sheep, Berkshire Hogs, Holstein-Friesian Cattle, Hungarian Ponies, Poultry.

HOPLAND, CAL.

SUCCESS WITH POULTRY. Our book on how to feed for profit has description of Poultry Houses and Plans; pictures of our farms and fowls. It is worth dollars to you. Sent for ten cents cash or stamps. We are the largest breeders of poultry in the world United [illegible] Poultry Farm 7, Hope, Ind

Fattening Poultry for the Market

By J. E. Dougherty

Just before the holiday season, which will soon be here, there will be a big demand for choice roasting chickens, ducks and turkeys. Mrs. Brown is planning a Christmas dinner party. Mrs. Jones will have a few friends for the week end. There are any quantity of Mrs. Joneses and Mrs. Browns who will desire for their Christmas dinners and their many other festive occasions plump, juicy, choicely fattened fowls to go with the appetizing array of other good things with which our American boards will be laden during the joyous holiday season.

Is the demand for such choice table fowl met? Partly. A good many of our wholesale buyers and packing houses have realized the money value of properly fattening fowls before sending them to the retail markets. Some of the large packing houses have established fattening plants at the different centers of poultry production and in nearly every market where poultry is received alive from the farms can be found fattening plants, where the shrewd wholesale dealers put the thin, scrawny birds, shipped in alive from the farms, into crates and feed them a strong, fattening milk ration for from ten to fourteen days before killing.

The proper fattening of fowls just before they are killed, not only increases their weight, the proportion of meat to bone, and the juiciness of the flesh, but it also adds attractiveness to the carcass. Attractiveness applies to dressed poultry and eggs every bit as forcibly as it applies to clothes or confection or anything else we wish to sell. Many of us hardly realize the immense amount of money that are expended annually for attrativeness. We will invariably pay more money for a thing that appeals to our eye than for a similar article, fully as serviceable, but not so attractive. An ill-fitting, plain, and ugly suit may be fully as useful and last just as long as another of exactly the same materials, but tastefully cut and fitted. But which has most value to the prospective purchaser? So it is with everything we buy. Not only must it serve its purpose, but it must be attractive as well.

With poultry the milk fattened carcass is not only more pleasing to the eye of the purchaser, but actually worth more money, for there is a larger proportion of edible meat on the well fattened carcass than on the thin, scrawny one, and the quality of the former is much superior, the flesh is jucier and much more palatable. When a bird has been properly fattened oil replaces much of the water in the flesh, so that when it is cooked, it becomes tender and juicy. Many consumers do not know how delicious a well finished chicken is, but after once securing a bird thus fattened they will be anxious to secure the same quality in the future. Most of the dressed chickens found in the average market to-day have been insufficiently fed and cannot be classed as fat. The people of France and England have appreciated for many years the value of properly fattened poultry, and not only have the producers become adept in the the art of fattening, but the consumers have been educated to know all the points of a well fattened carcass, and thus understand how to buy poultry meat of high quality.

When sending stock to market higher prices will be received and greater net profits realized if the fowls are in choice condition than if they are simply caught up and shipped without any fattening being done whatever. By fattening in crates for from ten to twenty days a gain of from three-quarters to one pound can be put on a three-quarter grown bird at a cost of approximately 6 cents per pound of gain in feed given. This cost of course is governed entirely by local feed prices. In crate fattening twice as much skimmed or buttermilk by weight should be used as grain. No water is fed, the milk taking the place of this. Two pounds of bran, 1 pound barley meal, 1 pound cornmeal and 8 pounds buttermilk makes a very good fattening ration. Other grains and mill feeds might be used to advantage in place of these given where they can be purchsed more cheaply.

How to Fatten—The fattening coops are usually 2x3 feet in size and 18 inches high. They may be built in tiers three nd four coops deep, and either against a wall or on low trucks, so as to be readily moved. The framework for each coop or tier of coops is made of 2-inch by 2-inch strips. The sides, top and back of each coop are enclosed either with lath running horizontally and spaced a little less than a lath's width apart or with one-inch mesh wire netting. The front of the coop is enclosed with lath running up and down and spaced about two inches apart. This front arrangement of the lath permits the fowls to poke their heads through to eat. Three of the front laths in each coop are bound together with cross pieces and hinged to form a door in such manner as not to hinder the birds from putting their heads out. The bottom of each coop is made of one-half inch square mesh wire hardware cloth; wover wire is too rough and is apt to cause bruising of the breast when the fowl is resting. There is a two-inch space under the bottom of each coop and shallow pans or trays are placed in this space. These pans may be of wood, but are then not so sanitary. Or if the fattening work is done out of doors the coops might be placed on trestles and the droppings allowed to fall through onto the ground and cleaned up from there. The pans used are one inch deep, and of the same width and length as the bottom of the coop. The droppings fall through the wire bottom of the coop into the pans below and these latter are drawn out and cleaned every other day. Fowls are fed two or three time a day from wooden or galvanized iron troughs set on a narrow platform before each row of coops or suspended by brackets. The writer has successfully used troughs made of roll rim roofing gutter cut to the right lengths and with end pieces riveted and soldered on.

Six to twelve birds, depending on their size, are placed in each coop and starved 24 hours before being given their first feed of the fattening ration. A day's labor and a few dollar's worth of material will make sufficient coops to hold a great many fowls. Practically any available building or lean-to, which is rainproof and fairly cool, is good for this work. Young cockerels seem to fatten best just before they reach maturity and begin to get staggy, although they can be fattened from broiler size up. Fowls intended for fattening should be starved twenty-four hours before given their first meal of the milk diet, and then fed lightly for the first three days. After that they should be fed at each meal all they will eat up clean in half an hour. They should be fed just as long as they continue to gain, which varies from about ten to twent days. Since crate fattening is an extremely forcing method and fowls go off feed after a time,the appetite must be watched closely. Just as soon as their combs begin to lose color, their eyes become a little dull and their appetites fall off they are as fat as they will get, and should be killed after starving twenty-four hours to empty the entrails of all food. At the end of the fattening period the carcasses of these milk-fed birds will be a joy to behold, and the consumer, so used to tough, stringy chicken, commonly found in our markets, will be agreeably surprised to have his palate tickled with so tender, juicy and deliciously flavored a morsel as the crate fattened, milk-fed fowl. It goes without saying that only healthy, vigorous birds can be fattened in this way.

HOW TO KILL LICE.

By J. A. Helmreich.

The estimated offspring from a single pair of lice in eight weeks is one hundred and twenty-five thousand. Lice are insects which inhabit the feathers of the bird. They have not a piercing mouth, but one that is used for biting. The louse subsists on the production of the skin and fragments of feathers. It is not so much what they get as nourishment from the individual that hurts, as the violent itching and pain they cause, especially if present in large numbers.

They also spread as rapidly as they breed. The lice from one individual may spread through the entire flock. Factors which favor their development are, poorly ventilated quarters, insufficient food and weak stock. The bird that looks poor and sickly is the one most likely to be infested.

Treatment.

Provide the flock with a dust bath, and apply the following home-made powder: To one part of crude carbolic acid and three parts of gasoline, add enough plaster of paris to take up the liquid; mix thoroughly. Spread out and let dry. If it is too lumpy run through a sieve. Store away in tight cans. Work well into the feathers, especially in fluff and under the wings. Repeat in ten days and make a thorough job of it.

Colorado Agricultural College.

The ideal farmer is first of all happy that he is a farmer; and then he is happy because he can be and do all he can be and do because he is an ideal farmer.

TREES TRUE TO NAME. The SILVA-BERGTHOLDT CO. NEWCASTLE, CALIF. PLACER NURSERIES

Get In On a Rising Market

With the demand rapidly increasing, making them most profitable, there is no better investment for the wide-awake fruit grower than

SHIPPING PLUMS

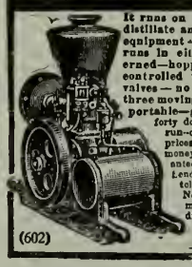
We have a complete assortment of all the good varieties on Myrobolan, Bitter Almond and Natural Peach Seedling Root.

Write Us First

THE SILVA-BERGTHOLDT CO.
"Fruit Tree Specialists"
P. O. Box F Newcastle, Cal.

TREES TRUE TO NAME. The SILVA-BERGTHOLDT CO. NEWCASTLE, CALIF. PLACER NURSERIES

20 Reasons Why You Should Investigate the SANDOW Kerosene Stationary ENGINE



It runs on kerosene (coal oil), gasoline, distillate and alcohol without change in equipment—starts without cranking—runs in either direction—throttle governed—hopper and tank-cooled—speed controlled while running—no cams—no valves—no gears—no sprockets—only three moving parts—light weight—easily portable—great power—starts easily at forty degrees below zero—complete ready to run—children operate them—low factory prices based on enormous out put—30 day money-back trial—10 years ironclad guarantee. Sizes, 1½ to 18 horsepower. Send a postal today for free catalog which tells how Sandow will be useful to you. No go-betweens. Pocket agents' and middlemen's commissions by dealing direct with factory. (602)

Detroit Motor Car Supply Co.
Canton Ave., Detroit, Mich.
(602)

PATENTS SECURED OR FEE RETURNED. Send sketch for free search of Patent Office Records. HOW TO OBTAIN A PATENT and WHAT TO INVENT with List of Inventions Wanted and Prizes offered for inventions sent free. PATENTS ADVERTISED. **FREE**
WANTED—NEW IDEAS
Send for our list of Patent Buyers.
VICTOR J. EVANS & CO., 836F, Washington, D. C.

PATENTS That Protect and Pay
Send Sketch or Model for FREE SEARCH
Books, Advice, Searcher and Big List of Inventions Wanted. **FREE**
Watson E. Coleman, Patent Lawyer, Wash., D. C.

Costs Only $30 Freight Paid

One Man Stump Puller

One man does the work—no horses needed. Weight 90 pounds. You can clear half an acre a day. Send for folder. Live agents wanted.
W. E. MORRISON, Box 21
821 Riverside Ave. Spokane, Wash.

Easy to apply—Sold by weight

APOLLO ROOFING

Made from the well known APOLLO Best Bloom Galvanized Sheets, and specially adapted to all classes of farm buildings. APOLLO Roofing and Siding Products are highest quality, full weight, fireproof, durable. Sold by leading dealers. Send for free booklet.
AMERICAN SHEET AND TIN PLATE COMPANY, Frick Bldg. Pittsburgh, Pa.

Money Earning in Small Towns

The man or woman in a small town who wants to earn some money "on the side" usually lacks the opportunities possessed by those living in larger places. We have a plan by which this can be accomplished and which is open to anyone with a little spare time on his or her hands—day or evening.

If you live in a town of less than 5,000 inhabitants and expect to have some spare time on your hands this winter, we'll pay you liberally for it. We have a new proposition to make to those living in towns of that size. If you will drop us a line of inquiry we will explain the offer fully to you.

It is an unusual opportunity and if you want to make some extra money—to turn leisure hours into cash, it will interest you.

Address ORCHARD AND FARM, HEARST BLDG., SAN FRANCISCO.

FARMERS' CLASSIFIED MARKET PLACE

Orchard and Farm will insert your advertisement under the proper classification for three cents a word for each insertion.

POULTRY

Baby Chicks—S. C. White Leghorns from tested hens of proven merit, mated to our pure blooded Wyckoff cockerels; bred for heavy laying for more than 30 years and universally recognized as the best paying strain of fowls ever produced. If you would have the highest quality at moderate prices, place your order with **G. & C. Poultry Farm, Rural No. 1, Sonoma, Cal.**

Sheppard's Famous Anconas — The world's best. Single or rose comb. First at world's greatest shows, including London, England; Madison Square and Cleveland. Greatest egg record, average 256 for entire flock. **Cecil Sheppard, Berea, Ohio, president International Ancona Club.**

Barred Plymouth Rocks—Winners at New York, Kansas and California shows. Eggs for hatching and choice stock for sale. Eighteen years breeding Barred Rocks exclusively. Write for folder. **"Vodden's Rockery," Los Gatos, Cal.**

Order Now! Thoroughbred bronze turkeys from largest turkey ranch in Stanislaus co.; large spring gobblers and hens for breeding stock. Address **Crows Landing Turkey Ranch, Crows Landing, Cal. Box 227.**

Turkeys—Bourbon Red, White Holland, Mammoth Black. The hardy, popular varieties and quick money-makers. **Mrs. B. Hocking, Guasti, Calif,** winner of firsts and specials for the past four years at Los Angeles shows.

Rhode Island Red Chicks and Hatching Eggs—Hundreds or thousands; 1,800 heavy layers. Settings from exhibition pens. Finest plant in California. **Pebbleside Poultry Farm and Hatchery, Sunnyvale.**

Pine Tree Poultry Farm, Los Gatos, Cal.—Hatching eggs from S. C. White Leghorns; selected stock; $6 per 100; $50 per 1,000; order now. No baby chicks.

Petaluma Hatchery—Now booking orders for December and January. Early chicks bring big money. Send for circular. **L. W. Clark, Petaluma, Cal.**

Incubator Chicks—White Rocks and White Leghorns; high-class stock. Send for booklet of prices. **Mahujo Farm, box 597, Sacramento, Cal.**

The Buff Orpingtons You Want—Big bony cockerels and fine pullets; prices reasonable. **Ernest L. Wilder, Los Gatos, Cal.**

Fine Cockerels on Hand—Black Minorca, White Leghorns, R. I. Reds, Brown Leghorns. **J. H. Stubbe, Campbell, Cal.**

Baby Chicks (White Leghorns) shipped on approval before remitting. No weak ones charged for. **Schellville Hatchery, Route 1, Sonoma, Cal.**

Trapnested White Leghorns—Bargains in cockerels from heavy layers; only $1. **Arthur R. Schroeder, box 22, San Gregorio, Cal.**

Incubators, Brooders, Supplies, Smith's Universal Chick Feed. Hogan's "Call of Hen," $2, prepaid. **F. F. Smith & Co., 1006 J St., Sacramento. Circulars.**

For Sale—Three months' old and up White Leghorn Pullets. **P. O. Box 442, Petaluma, Cal.**

Thoroughbred White Holland and Bourbon Red Turkeys. E. A. McKinley, Uklah, Cal., R. F. D.

Bourbon Red Turkeys—Hardy breed, reared in high altitude. **C. P. Guthrie, San Jacinto, Cal.**

Andalusians—If you want eggs get Andalusian. Eggs and stock for sale. **Daniel Calbreath, Monmouth, Oregon.**

Croley's Everlay Egg Mash has met with immediate success. Why not try it.

HELP WANTED

Free Illustrated Book tells of about 300,000 protected positions in U. S. service. Thousands of vacancies every year. There is a big chance here for you, sure and generous pay, lifetime employment. Just ask for booklet S-939. No obligation. **Earl Hopkins, Washington, D. C.**

Firemen, brakemen, railroads near your home; $100 to $120; experience unnecessary; send age, postage. **Railway Association, Dept. P 3, Brooklyn, N. Y.**

LIVESTOCK

For Sale—Guinea pigs 50c each. All sizes Belgian Hares and Flemish Giants, steel grey, black and silver grey. My price ranges from $1.00 up, according to size. My stock is the best. **H. Guibor, 1314 Pinchot st., Stockton, Calif.**

Sunnyside herd—Registered Holstein cattle. **R. F. Guerin, R. 3, box 58, Visalia, Cal.**

Duroc Jersey Boars—All sizes, ready for delivery. Address **Lindquist Bros., Turlock, Cal.**

Several pair Breeding Foxes. Write for circular. **Reid Bros., Bothwell, Ontario, Canada.**

For Sale—Fine little bay Shetland stallion, eight years. **Yocum & Sons, Bellota, Cal.**

Registered Chester Whites, $15.00—12 weeks old; sire weighs 800 lbs, 1½ yrs. old. **Dallas Bache, Hollister, Cal.**

Registered Berkshires $10 at weaning time. **W. D. Good, Mt. Vernon, Wash.**

RABBITS

New Zealand Reds—The favorite hare. Everyone falls in love with them. They are kind and gentle, healthy and vigorous and excellent eating. Mrs. Richey's have won 12 ribbons this year. Have some fine young bucks from my prize winner. **Mrs. C. A. Richey, R. D. No. 8, Box 557, Los Angeles, Cal.**

For Sale—Thoroughbred New Zealand hare; healthy stock guaranteed; does bred $3.00; does, breeding age, $2.50. **New Zealand Rabbit Warren, 18 Grant Ave., Santa Cruz, Cal.**

Caldwell New Zealand Reds won first prizes at San Francisco, Sacramento, San Jose, Santa Cruz, Chico, San Diego, Los Angeles and Riverside shows. Catlogue on request. **Caldwell Bros., Los Angeles, box 613F.**

Flemish Giants—"The real giants"; you wouldn't raise bantam chickens for market, so don't raise small rabbits. Get "the real giants." **J. H. Stubbe, Campbell, Cal.**

Flemish and Belgian Hares; good stock, prices reasonable. **Geo. Herman, 604 Olive St., Santa Rosa, Cal.**

MISCELLANEOUS—FOR SALE

Building Material, new, perfect; new, slightly damaged; 2d-hand. Every sale guaranteed satisfactory; we must decrease our supply one-half before stocktaking Jan. 1, 1916. We are offering better values, more up-to-date goods than ever before. Your inspection is invited. Largest stock, better quality and lowest prices, considering the grade. These are facts—be convinced by honest personal investigation. We are open for criticism. Advertise as we sell, adhering to the truth—refraining from falsity. Send in, or better yet, bring your list—we fit you out completely—furnish car and load—no bother to you—house and barn in one car—our stock comprises everything pertaining to building, and also wire fencings, etc. See us this week for special car lot offer. **Symon Bros., Wreckers, one-half Block 11th and Market Sts., San Francisco.**

EVERYTHING
for the
BUILDER
Bargains in Building Material
We can save you money on every item. Immense assortment of all kinds of second-hand building materials. New and second-hand lumber, doors, windows, corrugated iron, chicken netting, bath tubs, toilets, roofing paper, etc., at the lowest prices.
Carload Lots a Specialty
H. McKEVITT & SON,
1849 Mission Street,
Near 14th Street San Francisco

Second-hand and New Water Pipe—All Sizes standard pipe and wrought iron screw casing pipe; guaranteed as good as new. Write for prices. **Weissbaum Pipe Works, 167 Eleventh St., San Francisco.**

Buy your Belts from **California Belting Company, 1459 Mission st., San Francisco.**

One Hundred 5-cent Owl Cigars prepaid for $3.85. **Frank J. Case, Richmond, Cal.**

MACHINERY AND SUPPLIES

Howell Gasoline Traction Well Driller, 800-foot capacity, fully equipped and in good repair. Address **Clarke & Davidson, 78 6th St., Chico, Cal.**

REAL ESTATE

Must Sell at Once—148 acres in Los Banos dairy district; only $110 an acre; 40 acres in alfalfa, fenced hog-tight; house, barn; windmill and tank; 4-wire fence around whole place; all hay on ranch goes with it; other land in vicinity sells at $200 to $250 an acre; this is the best buy in the State; owner must raise $6,000 at once; balance on long time at 6 per cent. Address **Owner, box 24, South Dos Palos, Cal.**

160 acres, 2 in orchard, 20 in pasture and cultivation, 100 can be plowed; 8 head cattle, 50 head angora goats, 1 horse, tools, two shares in telephone. Big range for stock; can run several hundred head of goats without any feed. For further information come and see, or address owner. Twenty-five hundred, part terms. **A. H. Smith, Dora, Oregon.**

Look Here! 15 Acres, half mile from Hollister, in prunes, alfalfa and berries. Excellent buildings, under irrigation, making owner, an old man, $1,000 per year. He wishes to retire. Full particulars gladly given. $10,500 with terms. Address **Edwards, Box 921, Arroyo Grande, Cal.**

Excellent Fruit and Truck Garden Lands in Eau Claire County, Wisconsin.—Wild lands $15 to $20 per acre; orchards 50 years old in vicinity; telephone and mail service. Ask for Fruit Book No. 9. **Land Department, Soo Ry., Minneapolis, Minn.**

130 Acres Bottom, five miles from Sacramento; $200 per acre; planted this year potatoes, tomatoes, beans, melons, onions; can get loan of $15,000, term of years, 6%; owner leaving State. Address **Box 492, Sacramento, Cal.**

A real bargain in Western Siskiyou County; 160 acres; $3,200 gets it; alfalfa, garden and fruit thrive; running water; above the fog. Write for particulars, **Hollis R. Anderson, Fort Jones, California.**

Free—"True Blue" 1915 Booklet. Tells the "How," "Why" and "Where" of overlooked State and Government land bargains. **Write California State Land Information Bureau, Sacramento, Cal.**

A Bargain in my 6,000-acre ranch in Nueces Canyon, well improved, well watered, 10 miles of new railroad; exchange part drygoods. **R. W. Lane, Laguna, Texas.**

For Sale—9½-acre fully equipped chicken ranch, near Petaluma, with stock; price $6,500, terms; sandy loam; fine home; a bargain. **Chas. E. Genazzi, Real Estate, Petaluma, Cal.**

Ten Acres, Near Rio Linda—Why pay $200 per acre when you can buy this tract for $125 per acre from the owner, and on easy terms. Address **Box 492, Sacramento.**

For Sale at a Bargain—An improved 320-acre farm in Adams county, Washington; half in crop. Price $17.50 per acre. Address **Box 953, Great Falls, Montana.**

Cheap—If you are worn out by valley heat and malaria, want land for fruit, range for stock, and health, address **W. A. Schorr, Berry Creek, Butte county, Cal.**

For Sale—5, 10, 20 or 30 acres in Palo Verde Valley; water stocked; well improved; 25 acres in alfalfa. **H. E. Fitch, Blythe, Cal.**

To Lease—700 acres of farming land in Santa Maria valley; terms. Apply to **F. J. Etcheverry, Ramona, Cal.**

For Sale or Rent—30 acres improved, 16 acres alfalfa. **V. D. Ross, Manteca, Cal.**

$15,000—Easy terms; 650-acre cattle ranch; house, barn, cattle, horses, hogs, tools. **Sam Rex, Middletown, Cal.**

Bargain in eighty acres vineyard. Owner, **Box 507, Fresno, Calif.**

REAL ESTATE WANTED

Farms Wanted. We have direct buying. Don't pay commissions. Write describing property, naming lowest price. We help buyers locate desirable property Free. **American Investment Association, 8 Palace Bldg., Minneapolis, Minn.**

Wanted—To hear of good farm or unimproved land for sale. Send description and price. **Northwestern Business Ageney, Minneapolis, Minn.**

ASSAYERS AND GOLD BUYERS

Gold, amalgam, rich ore bought; cash; assaying, 50c. **Pioneer Assaying Company, 450 Market st., San Francisco, Cal.**

TREES

Finest Walnut and Pecan Trees in the State. Only nurseries growing all grafts used in nursery. Our Franquette, Kerr Parisienne and Tribble Mayette walnuts won first premium awards at State Fair for three years. These varieties can't be had from other nurseries. Large stock Eureka, Concord, Wiltz's San Jose Mayette and other varieties. Investigate our Mammoth Paper-Shell Pecans. Pears on blight proof root. Large stock fruit trees, plants, olives, etc., at reduced prices. **Tribble Nurseries, Elk Grove, Cal.**

For Sale at Corning, 4,000 Mission olive trees from three to seven feet in height. Cuttings selected from the best producing orchards at Corning. Trees mostly two years old in March. Address **Midland Counties Land and Irrigation Company, First National Bank Bldg., San Francisco.**

For Sale—Grafted Washington Navel orange, lemon and Mission olive trees; clean, vigorous, well rooted and healthy. Special price for large order. **I. Shoda, representative of largest Nursery Association, 230 M st., Sacramento, Cal.**

Choice lot of one-year apple trees; first-class stock, 4 to 6 feet; $5.00 per 100. Full line of nursery stock at equally low prices. Catalogue and price list on request. **Wirt Nursery, R. F. D. No. 1, Portland, Oregon.**

Mission Olives—Will be two years old in March. To be absolutely sure of getting Missions I only propagate from my own trees I raised thirty years ago. Also cuttings from same trees for sale. **W. A. Hayne, Marysville, Box 461.**

$70 and $50 cash with orders for present or future delivery. Luther Burbank, $70 per 1,000. Mediterranean, $50 per 1,000. **Luther Burbank and Mediterranian Spineless Cactus Plantations, San Dimas, Cal.** Agents wanted.

Walnut Trees—Eureka and El Monte varieties a specialty; also Franquette and Placentia. Write for prices and description of stock. Personal inspection invited. **Eureka Walnut Nursery, Montebello, Cal.**

Mission Olive and Eureka Lemon Trees for immediate planting. Special prices on application. Write now. **A. C. Wisegarver, San Fernando, Cal.**

Orange Trees—1915 delivery; registered stock; quality counts; prices right; allow terms. **Strathmore Citrus Nursery, Strathmore, Tulare Co., Cal.**

For Sale—Nursery stock, fine stock trees Royal Apricot and Philips Cling Peaches. **Address Alfred Nolte, R. F. D. No. 2. Hemet, Cal.**

Olives Our Specialty—Fine thrifty trees of all sizes at "bed rock" prices. **Exeter Nurseries, Exeter, Cal.**

Quality Trees—Cash Nurseries, Sebastopol, Cal.

SEEDS, PLANTS, ETC.

Strawberry Plants—Magoon, Marshall Clark's Seedling, New Oregon, Klondyke Early, Ozark, $2.50 per 1,000. Buy direct from grower. **J. W. Vinacke, Canby, Oregon.**

OSTRICHES

Your only opportunity to get a start in a most interesting and profitable industry. Ostriches are no care, harmless, perfect pets, and increase rapidly. No stock or poultry more profitable. One acre of alfalfa maintains 4 ostriches entire year, and the income from $200 up. California climate ideal. I have a limited number choice stock at very reasonable price. For further information call at farm, Exposition Grounds, or address **W. H. Robison, 2762 Van Ness ave., San Francisco.**

FROGS

Frogs—Investigate breeding big Eastern bullfrogs; unusual possibilities west of mountains. Tremendous demand. **Aquafeco, Seymour, Conn.**

PHEASANTS

Chinese Ringneck Pheasants, $2.50 each, either sex. **Powers' Pheasantry, 935 So. Tenth St., San Jose, Cal.**

BEES AND HONEY

Beekeeping Pays Big—Price list, bees, instruction books, etc., free. **Spencer Apiaries Co., Box 16, Nordhoff, Cal.**

Farmers' Market Place

AGENTS WANTED

Young Man, would you accept and wear a fine tailor made suit just for showing it to your friends? Or a Slip-on Raincoat free? Could you use $5 a day for a little spare time? Perhaps we can offer you a steady job? Write at once and get beautiful samples, styles and this wonderful offer. **Banner Tailoring Co., Dept. 925, Chicago.**

Agents wanted in each town and rural district to sell useful article. Good proposition. Also reliable man to travel. References required. Write for particulars. **Unity Merchandising Co., 132 Ocean St., Santa Cruz, Cal.**

Will pay Reliable Man or Woman $12.50 to distribute 100 FREE pkgs. Perfumed Borax Soap Powder among friends. No money required. **L. Ward Borax Co., 210 Institute Pl., Chicago.**

I made $50,000 in five years in the mail order business; began with $5. Send for free booklet. Tells how. **HEACOCK, 1695 Lockport, N. Y.**

SALESMEN WANTED

Wanted—Responsible party to take charge of business in each county. New Automatic Combination Tool, combined wire fence stretcher, post puller, lifting jack, etc. Lifts or pulls 3 tons, weighs 24 pounds. Sells to farmers, shops, teamsters, etc. Descriptive catalogue and terms upon request. **Harrah Manufacturing Co., Box M, Bloomfield, Ind.**

Wanted—Salesmen to sell my fast-selling pocket garment hanger, at 25c, at 100 per cent profit; other fast-selling novelties. **Dan. I. Murray, 3 Malden Lane, New York.**

BUSINESS CHANCES

Wanted—Some one with dairy herd from 15 to 30 head to come in on alfalfa ranch. Particulars **O. Goldsworthy, D 1 Glenn, Glenn Co., Cal.**

Any intelligent person may earn good income corresponding for newspapers; experience unnecessary. Send for particulars. **Press Syndicate, 1695 Lockport, N. Y.**

BUSINESS PERSONALS

Universal Information Bureau, Box 963, Sacramento, California. Circular for stamp.

Ten Historic Views of Utah, 10c. **Greiner, Box 893X, Ogden, Utah.**

EDUCATIONAL

Self-Instructive Books—Agricultural, mechanical, scientific, business, art, literary. Any subject. Lists 6c. Mention subject (detail). **C. Higene Co., D2441 Post St., San Francisco.**

Van der Naillen's. All Engineering School; estab. 1864. **51st and Telegraph ave., Oakland, Cal.**

AUTOMOBILE SUPPLIES

The Housel Improved Ford Starter—Simple, absolutely safe, reliable, efficient, inexpensive. Every Ford owner needs one. **Write Box 193, Buffalo, N. Y.**

BUILDINGS AT EXPOSITION.

The live stock buildings at the Panama-Pacific Exposition are fast being completed. The office building and Congress Hall are now finished. The department of live stock will move into their new quarters very shortly. The feed storage building is now complete and ready for the reception of large supplies of all kinds of feed which will be needed to care for the view herds on permanent exhibition as well as the animals shown later in the season in competition for premiums, and the race horses, many of which will winter here. This feed is bought at the most advantageous prices and will be sold to the exhibitors without profit.

The dairy cattle barn is one of the very best equipped in the world. There has never been anything like it at any national show. The feed troughs and stalls are all enameled. The Jersey and Guernsey view herds will be on exhibition in January and the floor they will stand on is made out of cork bricks, the most sanitary floor known.

SELLING DUCK EGGS

In your November number there is an article on runner ducks. Kindly advise best way to dispose of eggs for as good prices as hen eggs. I have been told that on account of being stronger in flavor you cannot sell them so well.—Subscriber, San Francisco, Cal.

The flavor of duck eggs depends to a considerable extent upon the feed they are given. Ducks permitted to get to water, other than drinking water, or fed too much sloppy food, or food containing fish, are likely to lay eggs much stronger than those kept in dry surroundings and given a heavy grain ration. Al Buker, the author of the article you mention, states that the eggs of ducks fed properly do not have a strong flavor. While hens eggs are more valued in one way in the markets, duck eggs are so much larger that this difficulty is largely overcome, provided the color is right, as it will be from the right strains of runner ducks. He states that he secures 5 cents less per dozen than hen eggs when eggs are plentiful, but during this time of year when hens are laying poorly, he receives 5 cents a dozen more from one of the leading markets of San Francisco.

THANKS FOR CUP.

The following letter from the winner of the cup presented by Orchard and Farm for the champion Ayrshire at the State Dairy Show at Modesto arrived too late to be given a place with other letters on the subject.

I was in San Francisco for over two weeks and did not receive the cup as promptly as I would have done otherwise. The "satisfaction" to me will be from the fact that this is the first cup I have received. That helps to encourage a young man who is trying to make good.

Thanking you for your kind consideration, I am, Yours very truly,
E. B. MacFARLAND.

Provide a scraper and mat outside the door and do not forget to use them before going into the house. Tracking mud into the house is an abomination. Scrubbing floors and sweeping carpets are not easy for the housewife.

SUGAR 2c a lb.

CALL FOR COMBINATION ORDER NO. 10

Our Best Seller

20 lbs. Sugar (fine dry granulated).....40c
2 cans of Oysters or 2 lbs. of Prunes.....25c
1 sack of Rice or 3 cans Carnation Milk.....25c
3 cans Corn Tomato Puree or 6 bars best Laundry Soap.....30c
3½ lbs. small White or 3 lbs. Lima Beans....25c
2 lbs. Tea, any flavor, or 3 lbs. fancy Coffee..$1.00
1 large bottle Flavoring Extract, or 2 lbs. best Coffee.....75c
2 Seeded Raisins or 1 bottle Tomato Catsup..25c
1 lb. Mixed Nuts or 2 cans Maine Corn.....25c
3 lbs. Macaroni, Tapioca or Rice.....25c
3 pkgs. Washing Powder or 3 cans Cleanser...15c
½ lb. square best Butter or 1 No. 5 pail Pure Lard.....65c
1 lb. Prunes or 1 pkg. Liza Pancake Flour...15c
1 bottle Vanilla or Lemon.....10c

Total for all unchanged.....$5.00

Send for Our Holiday Price List

A Free Trial Order will make you one of our many well-satisfied customers.

FREE DELIVERY ACROSS THE BAY. MAIL ORDERS A SPECIALTY. PROMPT SHIPMENT.

FREESE & CO.

Phone West 25

1260-66 Divisadero, Corner Ellis, San Francisco

Christmas Gifts and Dinners

So many more suggestions regarding Christmas gifts came in last month than could be used it seemed a shame not to give some of them for the December issue, especially since it will be several weeks before Christmas actually is here. Even in addition to those given below, there are a number of excellent gifts told of which have to be held over, but those given before and this month provide just as good a list of suggestions as very well could be given.

Made From an Egg Whip.

Take an ordinary egg whip, the wire kind that has criss-cross wires on it. Wind every bit of wire up with baby ribbon, make a small cushion to fit the whip part and sew securely. Take a small glass and secure it to the handle. Then tie a nice bow of ribbon for a hanger and now you have a pincushion and hair receiver, or hairpin holder combined.—MRS. W. B. COOPER, Aloha Ranch, Smith's Flat, Cal.

Tooth Brush Holder.

Take good quality of ribbon any desired shade, 1¾ inches wide and 18 inches long, and line with rubber tissue, which can be had at the lining counter of any department store. Hem one end and turn the other in a point. Turn up seven inches from the hemmed end and stitch all around on the machine. Add a few inches of baby ribbon to tie down the flap when traveling. Tie in a bow and hang on the wash stand when at home. This holder protects the contents of a suit case from a damp brush.—MRS. J. L. BEVERS, Oleta, Cal.

A Suit Cover.

Buy a five cent coat hanger and wind it with No. 3 ribbon of desired color. Take three yards of fine lawn silkoline or six yards of China silk. If with figures, to match ribbon in color. Cut silkoline in two so the pattern will be right side up and shape shoulders by the coat hanger. Join with a flat fell seam and leave three inches in the middle unsewn. Face this slot and make three outward turning tucks in each shoulder like a kimono, stitching six or seven inches below the shoulder seam. Join the sides and put an inch and a half hem on bottom. Sew four snap buttons on the inside of hem and sew bows of ribbon like that on hanger on shoulders. The dress is hung on hanger, then covered.—MRS. FRANK MORIN, Healdsburg, Cal.

Christmas Bag for Invalid.

Make a bag of cretonne or other bright material, which may afterwards be used as a small laundry bag, and fill it with a number of little gifts prepared by friends. Tie the packages with bright colored ribbon and leave one end of each ribbon about half a yard long so that it will hang out of the bag. Each day one ribbon is to be pulled and the gift at the bottom opened. Try to have at least thirty. Aside from the pleasure of receiving the gifts, the excitement of having this little treat each day for a month is a welcome break in a monotonous life. Gifts will readily suggest themselves. Among the most acceptable are books, candy, photographs, soap, toilet water, small toilet articles, slippers, handkerchiefs, neckwear, writing materials, etc.—MRS. G. W. SHERMAN, Santa Cruz, Cal.

A Cheery Letter.

Many housewives are often too busy to make the many inexpensive Christmas gifts for their many friends, yet for those absent ones we may bring much joy by writing to all a cheery Christmas letter, mailed so it will reach them on Christmas morning. Nothing could be more economical, yet bring great joy to those perhaps we have not seen for years.—IDA S. CAUSEY, Quincy, Cal.

Some Pin Cushions.

To make a dainty and odd pin cushion, use a pasteboard tube, or stiff paper that will make one, about six inches round by three high. Fill firmly with cotton batting, cover with pretty cloth, gather in the top to fit around the neck of a small china doll head, held firm in the top of cushion. Tie a narrow ribbon around the neck. For a hanging cushion use a larger doll head, take a piece of plush or silk seven inches long by six wide, cut heart shapes, sew all but the small opening in the top, fill very full with cotton, fasten the head in the top of the heart and finish prettily. Take ribbon long enough to hand with and sew with bow loops to the corners. To make a handkerchief case of pretty crepe tissue paper napkins, bind the edge of double paper with ribbon, fold like an envelope and finish flap with a bow.—M. E. McDANIEL, Templeton, Cal.

Cook Book.

A home-made cook book is an acceptable present for a housewife or prospective one. The cost is small. Select a stiff back notebook, cover with crash or any similar wash material. This cover is made by cutting a piece of material four times the width of the book to be covered and as long as the height of the book, allowing for the seams. Stitch the sides and it is ready to slip on. Before stitching it may be stenciled or a monogram embroidered. Fill it with the many good recipes which may be copied from the pages of Orchard and Farm. Mrs. J. J. O'CONNELL, Washington, D. C.

Strawberry Floating Island.

Crush one pint of ripe strawberries and sweeten to taste. Beat the whites of four eggs to a stiff froth and gradually mix in half a cupful of powdered sugar and sufficient of the strained juice from the berries to color and flavor, then beat again until the meringue will stand alone. Meanwhile prepare a boiled custard from one pint of milk, the yolks of the eggs, a pinch of salt and half a cupful of sugar. Cook the custard over hot water until well thickened (do not let it boil), flavor with a little vanilla extract and when cool pour into a glass dish. Place carefully over the custard a layer of the crushed berries and drop the strawberry meringue or frosting in peaks on top of the fruit. Place on ice to chill thoroughly before serving.—MRS. JAMES LEUHOLTZ, Birds Landing, Cal.

Favorite Ginger Cookies.

Take two cups of sugar, one cup of Orleans molasses, one cup of chicken fat, lard or meat frying will do, one teaspoon of cinnamon, one tablespoonful of ginger; mix thoroughly and bring to the boil, then add one level tablespoonful of soda dissolved in two tablespoonfuls of water, one-half teaspoonful of salt, two well beaten eggs and flour to roll; roll thin and bake in a quick oven.—MRS. JULIA MUTCHLER, Pomona, Cal.

Roast Turkey.

Pick, singe and draw turkey; tie legs and wings neatly to body, salt and pepper inside and outside, make a dressing of soaked bread, seasoned with pepper, sage and one large onion chopped fine, two eggs and butter size of an egg and add chopped liver; mix thoroughly into moist paste and fill turkey, lay slices of bacon or salt pork across breast and legs, fasten with tooth picks so that they will remain; bake in moderate oven for about three hours, baste often with drippings.—MRS. EMMA SMITH, Milville, Cal.

Making Pin Money on the Farm

By "A Country Woman," New Meadows, Idaho.

This is a story by one of our readers, coming without suggestion on our part, on her experiences in making pin money on the farm. In almost the same mail as this was an account by another reader on butter-making and selling from cream from the family cow. If you have had any valuable experiences in the way of making pin money on the farm, plan to tell us of them, but wait, please, until the next issue appears before taking your pen in hand and starting to write.

I often notice in the magazine ways and means for women to earn money, but it seems to mean city or town women. You hardly ever see ways or means by which a real country woman can earn real "pin money." It is all very easy for town or city women to earn a few dollars, as there are so many opportunities, but it is quite a problem to women living out on the farms several miles from town. It is true, they raise chickens and have eggs to sell, but some do not understand how to go about it to make it pay. I will try to tell of my success and also failures.

There is nothing like experience, but I would advise any one trying the business for the first time to read all the poultry books she can get hold of, then to go at it on a small scale, and do not think you have to have expensive chicken houses or chicken yards to start with. That will come later on when you have decided what you want, where you want it put, etc.

I like best the Brown Leghorns for layers and the Rhode Island Reds for setting and to eat, as they get quite large, are good layers and good rustlers, next to the Leghorns, for when you feed these two breeds they eat what they want, then go off and rustle for something different. Other breeds I have had would eat all they could, then sit around until next feeding time and I never got many eggs.

I find that wheat is the best all around feed I know of. A little corn in winter with the wheat makes an ideal feed. I give them all the warm milk they want, either sour or sweet skim milk. Of course, I have a scratching shed in winter. It does not have to be made so tight and good, as long as it has plenty of sunlight. I feed in a litter, so any time they want feed they can find it in this litter by scratching for it.

You cannot get good results on skimpy feeding. If you don't want to feed them well, don't waste your time fooling with the chicken problem, because you will make a failure of it sure.

In the scratching shed have a b' dust box of dry dust and the hens will keep the lice off.

In summer, when mites trouble, put kerosene on the roosts, in the coops where small chickens are kept, etc. It is a sure remedy, cheap, and also kills lice that may be in the coops.

Raising the Chickens.

In hatching off chickens I do not use an incubator, but others do with good success, so they tell me, and they may be all right, but the way I do is to have a setting pen with feed and water, grit and dust box in it and when a hen wants to set, I put her in this place and give her eggs. I always try to set several at once, so that I can give all the chickens to one hen when they hatch. Some hens I set over the second time, if they are in good condition, which they usually are by having feed at hand when they come off.

The first few days I feed little chicks rolled oats, then cracked corn and wheat. One has to learn how much and how often by actual experience, but feed them plenty and keep them growing.

Shade and water are two things almost as necessary as feed. Watering once or twice a day won't do. Keep it before them all the time. Feed everything dry and they won't get the bowel complaint, which carries off hundreds of young chicks every year.

I always let my chickens run. The old hen will soon learn to hunt cover if a shower comes up. If you start in to hunt them up and drive them to cover every time it rains, they expect it and won't hunt cover, so don't spoil them in the start, and don't coddle them. They will get out and forage as long as the snow stays off in the fall and winter, then when winter comes you can give them stuff from the root cellar, like cabbage and beets, or anything they like, and it makes a change.

I have good success with chickens. In the first place, I love to raise them and be out among them and I talk to them and some hens seem to know, as they will answer in their own language, and it makes it easy for me to handle them when they commence to set.

Now, of course, every woman does not love chickens, and for others there is cream or butter to be sold. Have regular customers and always make good, sweet butter and you will have no trouble in disposing of it.

A Garden Experience.

And then there is the garden. One summer I tried selling garden truck, but it is harder than the chicken business. I put in one acre of garden with my husband's help. We made a good deep seed bed, nice and smooth and planted early peas, tomatoes, cabbage, sweet corn and melons. We also planted quite a few onion seed, but they are slow about coming up. One has to have a clean piece of ground so the weeds don't grow before the onions get up. Then they have to be weeded by hand.

The garden did well. We planted everything in rows so the garden plow could be used with one horse. We lived about two miles from a small town and they had been used to a woman gardener, so it was not hard for me to commence. This other woman gardener had moved away and I took her place in selling them vegetables. I had a light spring wagon that I could drive one horse to, so I was quite confident. The first day I took the vegetables to town all the housewives were waiting for me and I had no trouble in selling all I had and I certainly enjoyed my early rides to town. I went about three times a week and also took chickens and eggs, as customers wanted them. There were just the two of us, so my house did not suffer much from being neglected. I also sold strawberries and blackberries.

I had lots of social chats with the town women, made lots of good friends that I have yet. I was afraid they would "look down on" me, as one woman quoted, but I always dressed neatly and acted as dignified as if I had been a book agent, or had any other things to sell, and I cleared $80 that summer. Of course, it meant lots of hard work and lots of failures, as I planted melons and the bugs ate them up and lots of other things, but one must not let these little things worry them, as you can always plant something else when one thing fails.

Turkeys Are Profitable.

As for me, I would rather raise chickens and also turkeys than garden truck, but I wasted lots of turkey eggs two years in trying to raise them with hens for mothers and they would always die sooner or later.

At last I let the turkey hen hatch and care for them and have had splendid luck ever since. The way I worked the turkey deal was this. The first setting of turkey eggs I always sold and then broke the turkey hen from setting and it would not be long before she laid another batch of eggs.

I always gathered the eggs every night, as something might rob the nest, and when the turkey commenced to set I gave her all the chicken eggs she could cover, but I let her set on them only until near hatching time, then I took them out of the nest and put her own eggs which I had under some hens in the hen house, as I thought if something did rob her nest the chicken eggs would not be such a loss. I also set the turkey hen on the hen eggs one week after the turkey eggs had been under the hens, so as to make both hatches come off at once, as it takes 28 days for the turkey eggs to hatch.

The turkey hen generally hatches off and is gone with her brood before you know it. Later on you see her out in the meadows with her brood. She is very shy for several months. When fall comes on she commences to come around home looking for winter quarters. Then I commence to feed corn to fatten them so they will be easy to drive in somewhere to catch.

When selling time came I never kept an account of what I made, but the most one hen brought me in raising a brood was $25. The rest did not do so well, but they are less expense than anything I know of, as they hunt their feed all summer.

Town Life Uncomfortable.

I am living in a small town right now, but am anxious to get back on the farm. I was born and raised on one and we find it is the only life for us. In town you have to work all the time, if you get anything ahead. It is my first town life and I have enough of it. Of course, I have my chickens and they run the whole year round, but it is not the country life, so, Farm Women, don't be anxious to come to town. You won't know what you are missing until you leave the farm.

I will be back on the good old soil when spring comes and I can see myself planting flowers and listening to the birds calling each other from the tree tops and the cackle of the hens in the barnyard and am thinking of the nice foamy milk to drink and use and the peace and quiet with good neighbors all around. What more could any one want any better? And the going to town on Saturday, meeting other farmers' wives there, and the ride home with a contented heart and at peace with all the world.

A well-arranged kitchen is one of the most important things in any home, but most kitchens are not arranged as well as they might be, and could be improved in a number of important particulars. The United States Department of Agriculture has just issued a bulletin which should be of big service in giving good suggestions on kitchen arrangement. It is entitled, "The Farm Kitchen as a Workshop" and can be had on application to the Office of Information, United States Department of Agriculture, Washington, D. C. Besides telling of possible and very simple improvements, the bulletin has a number of diagrams which simplify the explanations.

"What shell it be? What shell it be?"
I looked at Biddy; Biddy looked at me.
Then at last she cackled with glee—
"Eggs shell it be! Eggs shell it be!"

Fortunes Are Being Made every year in Florida out of Fruits and Early Vegetables. Not a better spot in the whole state than BAY VIEW. Our big, free handsomely illustrated Book will prove it to you. Soil is deep, rich, sandy loam—very exceptional for Florida. Sample of this soil mailed free with literature. Plenty of rainfall 12 months in the year. Irrigation is unheard of. Crop failures practically unknown. Two and three crops easily raised each year on the same ground. $50 to $500 profit per acre each year. Satsuma oranges, figs, pears, peaches, plums, grapes and all kinds of berries produce abundantly. You can also raise enormous crops of corn, oats, hay, Japanese cane, clover, sweet and Irish potatoes, sugar cane, celery, tomatoes, lettuce, cabbage, watermelons, cantaloupes, egg plant, cucumbers, radishes, turnips and all kinds of early profitable vegetables. Ideal location for Dairying and Stock Raising. Ready markets and good prices. Grass for pasture the year round. Don't have to stable and dry feed six months in the year. One of the finest climates in the United States, both summer and winter. No sunstrokes in summer—no frostbites in winter. Ideal salt water boating, bathing and fishing. Lumber at wholesale prices. Good stores, churches and schools. WRITE TO-DAY FOR FREE BOOK, SAMPLE OF SOIL, MAPS, ETC.

Santa Rosa Plantation Company
Room 304, 208 N. 5th Ave. Chicago, Ill

BRENTWOOD Irrigated Farms
"BEST IN THE WEST"

In Eastern Contra Costa county, east of Mt. Diablo.
63 miles from San Francisco.
Soil and climate unexcelled.
Suitable for alfalfa, fruits, nuts, dairying, poultry and hogs.
Price $300 an acre, including water right.
Write to-day for illustrated folder, map, etc.

BALFOUR-GUTHRIE & CO.
350 California St. San Francisco

WE WILL BUILD TO YOUR ORDER
Plan your house and we will build it with every detail arrangement just as you want it and at a surprisingly low cost.
Write for our new Plan Book of portable buildings or submit your plans for estimate. KENYON PACIFIC COMPANY, No. 3 Franklin St., San Francisco, Cal.

Money in Honey Bees pay.—Easy, interesting work. Latest methods of bee-keeping—simply told in our "Bee Primer." Highly instructive. Send today for the book and 6 months' subscription to **25c**
AMERICAN BEE JOURNAL, Box I Hamilton, Ill.

$25.00 A WEEK TO STUDENTS
We have several hundred positions for high school or college students, who can devote all or a part of their spare time this winter to representing Orchard and Farm. Appointments are being made now and any young man or woman student who wishes to make money and at the same time enjoy the work should apply at once.
Address:
ORCHARD AND FARM,
HEARST BLDG., SAN FRANCISCO.

Receipts for the Christmas Dinner

"My Favorite Receipt for the Christmas Dinner" was the topic for the Household Exchange for December and if many of the receipts are tried in any one home all appearances are that there will be cases of indigestion aplenty, not on account of the dishes not being good, but on account of them being so good that they will be indulged in too abundantly.

On account of the great number of suggestions that have come in above what could be used it has seemed well to make a change in the method of conducting the household department. The Household Exchange will be dropped for a few months, but will probably be taken up again later on with several topics for suggestions which have not been touched thus far. Meanwhile a number of the good suggestions now on hand will be used so that there will be no loss of value to readers in this department.

It seems now very probable that some accounts of household experiences will be called for soon, like that given on another page, on the way one of our readers earned some pin money. We ask our readers to wait until further announcement is made before sending in anything of this order, but it might be well to keep in mind some personal experiences relating to farm home life which would be serviceable to other farm women. But as we say, wait before sending anything in, and if they come as plentifully as suggestions have come the household editor will pretty nearly be swamped, or will have to hire several assistants.

The suggestions for the month are given below. Suitable awards are being sent.

Inexpensive Plum Pudding.

In my home town I had the reputation of making the best plum pudding. The receipt is so inexpensive that I would not dare tell everyone who ate my pudding. Take 2 cups bread crumbs, 1 cup chopped suet, 1 cup molasses, 1 cup sour milk, 1 cup flour, mixed with 1 cup raisins, 1 teaspoonful soda, one-half teaspoonful of ginger; steam four hours and serve with a cornstarch sauce. A good way to steam it is to put the pudding in a five pound lard pail and set inside of a ten pound lard pail with a few nails under the pudding pail so the water can circulate under it.—MRS. MAUD WOOD, La Pine, Oregon.

Christmas Fruit Cookies.

Take one-half cupful lard, one-half cupful butter, 1 cupful sugar, 2 beaten eggs, one-half cupful milk, 2 cupfuls flour, one-quarter teaspoonful soda, three-quarters cupful currants, three-quarters cupful raisins, 2 cupfuls uncooked rolled oats; cream the butter and lard, add the sugar, eggs, milk, flour, soda, currants, raisins and rolled oats; mix thoroughly, drop a teaspoonful at a time in unbuttered pans, and bake in a slow oven.—MRS. EMMA T. NANNEY, Vancouver, Washington.

Baking Chicken.

To bake your Christmas chicken or turkey, clean the fowl and wash thoroughly in baking soda water, then dismember it and cut it all up as for the table, put in the pan and pack the dressing all around it snugly, add the water, baste frequently and when you dish it up it is all ready for the table; try this and see if you don't think this the best way to roast a fowl.—MRS. C. W. FENIMORE, Ceres, Cal.

Black Fruit Cake.

Take three cupfuls butter, two cupfuls sugar, brown, eight eggs, one and one-half pints of browned flour, three cupfuls currants, two cupfuls seeded raisins, one and one-half cupful sliced citron, one cupful blanched chopped almonds, one-half cupful lemon peel, one-half cupful orange peel, one-half cupful black coffee, cold, 2 teaspoonfuls each nutmeg and mace, one teaspoonful each cloves and allspices, one teaspoonful vanilla, add flour to thicken and one and one-half teaspoonfuls baking powder; cover outside and bottom of baking dish with three thicknesses of wrapping paper, also the top; bake five hours.—MRS. M. M. ALLISON, Manti, Utah.

To Roast a Goose.

For hundreds of years goose has been the important dish of the conventional Christmas dinner. It is an old English custom and we still continue it in this country. To prepare a goose for your holiday dinner select one young and tender, for its palatability greatly depends on this; pick well and singe, then clean carefully, put liver and gizzard on to cook as a turkey's; when goose is washed, wiped and ready for dressing have ready three potatoes, boiled and mashed, or use bread crumbs as for turkey, chop fine three onions, throw in cold water, stir into potatoes a spoonful of butter, a little salt and pepper and a teaspoonful of sage; drain off onions, mix well with potatoes, sage, etc.; stuff goose, sew up slit made for cleaning and introducing the stuffing, roast as turkey, dredging and basting; make gravy from drippings; serve with apple sauce.—MRS. S. C. COOK, Elko, Nev.

Candied Sweet Potatoes.

My favorite Christmas dish is candied sweet potatoes. Boil several good sized sweet potatoes; peel and slice lengthwise, or into round pieces, and place in a well-buttered pudding dish or casserole. On each layer sprinkle a generous quantity of light brown or granulated sugar. On the top layer put plenty of sugar and little chunks of butter. If desired, a little cinnamon may be added with the sugar. This is a delicious dish when baked in a hot oven to a light brown. Nothing nicer, to my notion, can be served with turkey and cranberries.—MRS. R. H. BROWN, Santa Maria, California.

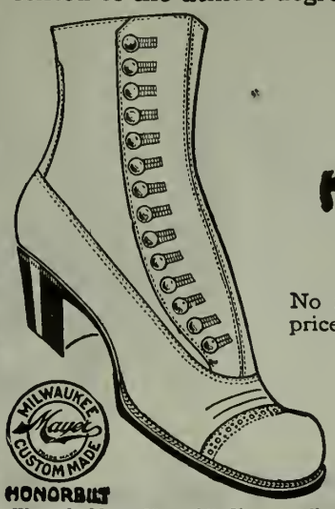
Mince Pie.

What is Christmas without mince pie? Even though the price of beef has soared, I have learned to make it just as delicious, much more healthful and economical as in the old times. For a large quantity, about four gallons, I use only four pounds of neck beef, boiled tender and chopped, three pounds of kidney suet. Take a box of tart apples, wash and wipe and remove cores and chop without pealing them. They go a third farther that way and I think they are nicer. Season to your taste with cinnamon, allspice, cloves, molasses and brown sugar, put in enough cider vinegar to give a sharp flavor, add currants and raisins. I use four pounds of each, but much less will do. Simmer slowly two or three hours. This is delicious. Our folks like it better than if it contained more meat, and it will keep for a year or longer.—MRS. FRANK SWANSON, Fallon, Cal.

Christmas Dinner.

Oyster Soup.
Roast Turkey, Gravy.
Mashed Irish Potatoes, Mashed Turnips.
Sweet Potatoes, partly boiled and then baked with the Turkey.
Chicken Pie, Celery-Salad.
English Plum Pudding, Mince Pie.
Cheese, Ice Cream, Fancy Cake.
Fruit, Nuts, Confectionery,
Orange Water Ice or Lemonade.
Coffee.
—MRS. THOMAS REUCK, Tulare, Cal.

Style, refinement, service, comfort and wear are represented to the utmost degree in our fine shoes for ladies.



Mayer

HONORBILT SHOES

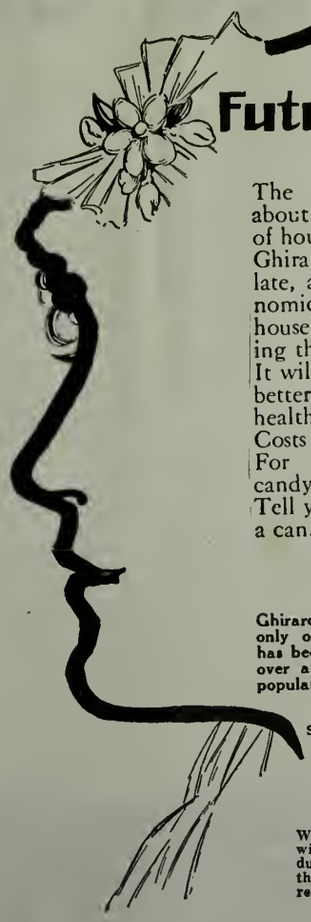
No matter how much more than our price you are willing to pay, better material and workmanship positively can not be secured. We buy the market's best of both—try them.

WARNING—Always look for the Mayer name and trade mark on the sole. If your dealer cannot supply you, write to us.

We make Mayer Honorbilt Shoes in all styles for men, women and children; *Drysox*, wet weather shoes; *Yerma Cushion Shoes, Martha Washington Comfort Shoes.*

F. Mayer Boot & Shoe Co., Milwaukee

The Future Mother



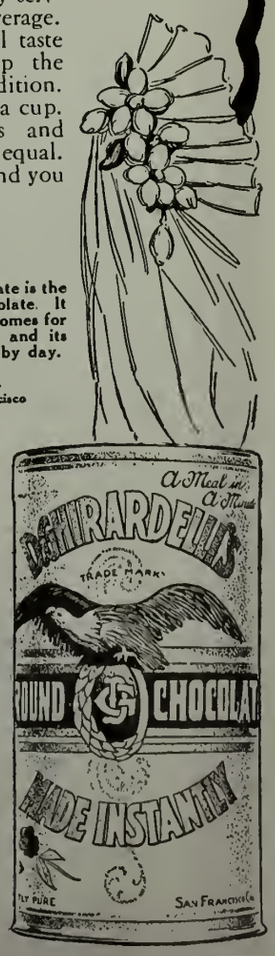
The young bride who is about to face the problems of housekeeping will find in Ghirardelli's Ground Chocolate, a wholesome and economical food-drink. Start housekeeping right by serving this nutritious beverage. It will make any meal taste better and will keep the health in perfect condition. Costs less than a cent a cup. For making desserts and candy it is without an equal. Tell your grocer to send you a can.

In hermetically sealed tins.

Ghirardelli's Ground Chocolate is the only original ground chocolate. It has been used in Western homes for over a third of a century and its popularity is growing day by day.

D. GHIRARDELLI CO.
Since 1852 San Francisco

While our price will not be increased during 1914, there will be no reduction in quality.



GHIRARDELLI'S GROUND CHOCOLATE

1915

Overland

TRADE MARK REGISTERED

$850

(Model 81)

Electrically Started and Lighted

THIS is the first car of its size, capacity, power and electrical equipment to sell below $1,000!

Though the price is lower than ever, the quality is maintained throughout. All materials, metals and workmanship are of the very best.

This newest Overland has the genuine fashionable streamline body design.

The body color is Brewster green—always so rich and attractive. It is neatly trimmed with fine hair-line striping of ivory white.

The electric starting and electric lighting equipment is one of the most reliable and best established on the market.

There is also a high tension magneto which is independent of the starting and lighting system and requires no dry cells.

This car rides just like it looks—beautifully. The new, long, improved, underslung rear springs give maximum riding comfort under all conditions.

Tires are 33 inch x 4 inch all around. Never before has a car at this price come equipped with such large tires.

It seats five adults comfortably, without crowding. It is a big, spacious five-passenger touring car.

It has the famous Overland 30 h. p. motor of remarkable strength, speed, durability and economy, developing more power than you will ever require.

This car at this price is destined to be known as the greatest motor car achievement of the season.

Orders are now being taken for immediate delivery.

Following are a few of the many high-grade features

30 h. p. motor
Stream-line body
Ample room for 5 passengers
Electrically started
Electrically lighted
Electric horn
High-tension magneto
All electric switches on instrument board of cowl dash
Ventilating, rain-vision type windshield
High-grade upholstery
Thermo-syphon cooling
Five bearing crankshaft
Rear axle; floating type
Rear springs; extra long, underslung, ¾ elliptic
106 inch wheelbase
33 inch x 4 inch tires
Demountable rims
One extra rim
Left-hand drive
Center control
Body color: Brewster green with ivory white striping
Mohair top, top boot, robe rail, foot rest, speedometer, tire carriers, full set of tools, jack and pump.

Handsome catalogue on request. Please address Dept. 180

The Willys-Overland Company, Toledo, Ohio

BY INVITATION MEMBER OF

NEW YORK U.S.A.

Model 80 *Prices:*

5 *Passenger Touring Car*	$1075
2 *Passenger Roadster*	$1050

Model 81 *Prices:*

5 Passenger Touring Car	**$850**
2 Passenger Roadster	**$795**
Delivery Wagon with closed body	**$895**
Delivery Wagon with open body	**$850**

Model 80 *Prices:*

4 *Passenger Coupe*	$1600

All prices f. o. b. Toledo, Ohio.